

## Supplementary Materials

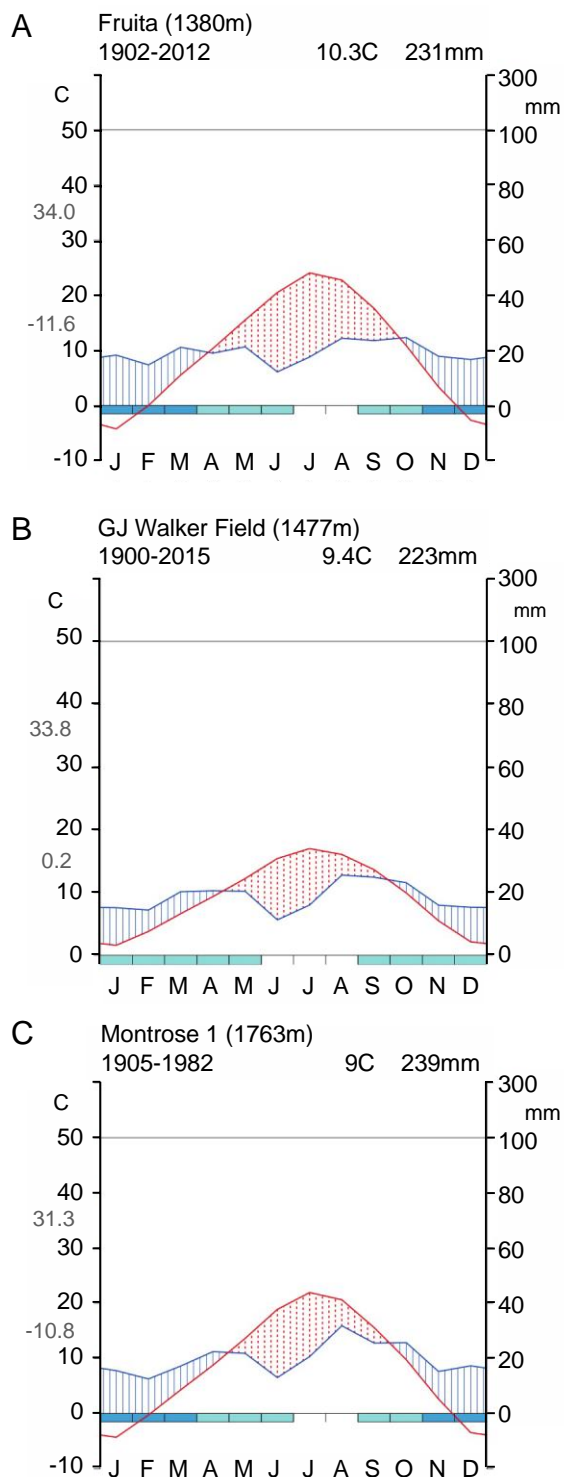


Figure S1. Walter-Leith climate diagrams based on data retrieved from National Oceanic and Atmospheric Administration (NOAA) weather stations at A) Fruita (1902 - 2012), B) Grand Junction (Walker Field 1900 - 2015), and C) Montrose (1905 - 1982), all in Colorado (NCDC 2015). Blue hatched areas indicate moist seasons, red dotted areas indicate dry seasons, and months with possible (light blue) and likely (dark blue) frost are indicated by horizontal bars.

Table S1. Native plant species characteristic of salt desert ecosystems of intermountain west of North America based on review of the literature. Nomenclature follows NRCS (2015).

Family	Species	Common name	Reference
<b>Succulent</b>			
Agavaceae	<i>Yucca glauca</i>	soapweed yucca	1
Cactaceae	<i>Echinocereus</i> spp.	hedgehog cactus	1
	<i>Mammillaria</i> spp.	--	2
	<i>Opuntia engelmannii</i>	cactus apple	1, 3
	<i>Opuntia</i> sp.	Pricklypear	2, 4
<b>Annual/biennial forbs</b>			
Asteraceae	<i>Chaenactis stevioides</i>	Esteve's pincushion	4
Boraginaceae	<i>Cryptantha elata</i>	cliffdweller's cryptantha	2, 3
	<i>Lappula occidentalis</i> var. <i>occidentalis</i>	flatspine stickseed	3, 4
Brassicaceae	<i>Descurania pinnata</i>	western tansymustard	4
Brassicaceae	<i>Lepidium montanum</i>	mountain pepperweed	2, 4
	<i>Lepidium ramosissimum</i> var. <i>bougeauanum</i>	Bourgeau's pepperweed	2, 4
Chenopodiaceae	<i>Atriplex prostrata</i> / <i>A. subspicata</i>	triangle orache / saline saltbush	5
	<i>Monolepis nuttalliana</i>	Nuttall's povertyweed	1
	<i>Salicornia rubra</i>	red swampfire	1
	<i>Suaeda calceoliformis</i>	Pursh seepweed	1
Hydrophyllaceae	<i>Phacelia crenulata</i> var. <i>courrgata</i>	cleftleaf wildheliotrope	2
	<i>Phacelia</i> spp.	Phacelia	6

Table S1 continued

<b>Family</b>	<b>Species</b>	<b>Common name</b>	<b>Reference</b>
Losaceae	<i>Mentzelia</i> spp.	Blazingstar	1
Malvaceae	<i>Sphaeralcea coccinea</i>	scarlet globemallow	1, 4, 2, 7
Onagraceae	<i>Oenothera scapoidea</i> ssp. <i>scapoidea</i>	Paiute suncup	2
	<i>Oenothera</i> spp.	evening primrose	6
Plantaginaceae	<i>Plantago purshii</i>	woolly plantain	2, 4
Polemoniaceae	<i>Aliciella leptomeria</i>	sand gilia	4
Polemoniaceae	<i>Ipomopsis polycladon</i>	manybranched ipomopsis	4
Polygonaceae	<i>Eriogonum cernuum</i>	nodding buckwheat	8
	<i>Eriogonum divaricatum</i>	divergent buckwheat	8
	<i>Eriogonum fusiforme</i>	Native American pipeweed	2, 4
	<i>Eriogonum gordonii</i>	Gordon's buckwheat	8
	<i>Eriogonum hookeri</i>	Hooker's buckwheat	8
	<i>Eriogonum inflatum</i>	desert trumpet	6
	<i>Eriogonum palmerianum</i>	Palmer's buckwheat	8
	<i>Eriogonum scabrellum</i>	Westwater buckwheat	8
	<i>Eriogonum wetherillii</i>	Wetherill's buckwheat	8
	<i>Stenogonum fleux</i>	bent two-whorl buckwheat	8
<b>Perennial forbs</b>			
Apiaceae	<i>Cymopterus</i> spp.	springparsley	2, 3, 4
Asteraceae	<i>Chaetopappa ericoides</i>	rose heath	1, 2, 3
	<i>Encelia nutans</i>	Noddinghead	8

Table S1 continued

<b>Family</b>	<b>Species</b>	<b>Common name</b>	<b>Reference</b>
Asteraceae	<i>Erigeron concinnus</i> var. <i>concinnus</i>	Navajo fleabane	2
	<i>Erigeron pulcherrimus</i>	basin fleabane	4
	<i>Platyschkuhria integrifolia</i>	Basindaisy	2, 3
	<i>Townsendia</i> spp.	Townsend daisy	2
	<i>Xylorhiza glabriuscula</i>	smooth woodyaster	6
	<i>Xylorhiza venusta</i>	charming woodyaster	1, 2, 4, 9
Brassicaceae	<i>Arabis pulchra</i>	beautiful rockcress	2
	<i>Lepidium crenatum</i>	Alkali pepperweed	8
	<i>Physaria acutifolia</i> var. <i>acutifolia</i>	sharp-leaf twinpod	2
	<i>Stanleya pinnata</i>	desert princesplume	2, 6
Fabaceae	<i>Astragalus asclepiadoides</i>	milkweed milkvetch	2
	<i>Astragalus chamaeleuce</i>	cicada milkvetch	2
	<i>Astragalus flavus</i>	yellow milkvetch	2
	<i>Astragalus missouriensis</i>	Missouri milkvetch	2, 4
Frankeniaceae	<i>Frankenia jamesii</i>	James' seaheath	6
Liliaceae	<i>Allium</i> spp.	wild onion	2, 3, 4
	<i>Calochortus</i> spp.	sego lily	2, 3, 4
	<i>Calochortus nuttallii</i>	sego lily	4
Nyctaginaceae	<i>Abronia elliptica</i>	fragrant white sand verbena	2, 3
Onagraceae	<i>Oenothera caespitosa</i> var. <i>caespitosa</i>	tufted evening primrose	2
Polemoniaceae	<i>Phlox longifolia</i>	longleaf phlox	3, 4

Table S1 continued

<b>Family</b>	<b>Species</b>	<b>Common name</b>	<b>Reference</b>
Polygonaceae	<i>Eriogonum ovalifolium</i>	cushion buckwheat	2
Schrophulariaceae	<i>Castilleja angustifolia</i> var. <i>dubia</i>	red desert paintbrush	2
	<i>Penstemon moffatii</i>	Moffatt's beardtongue	2
<b>Annual grass</b>			
Poaceae	<i>Vulpia octoflora</i>	sixweeks fescue	1, 2, 4
	<i>Munroa squarrosa</i>	false buffalograss	
<b>Perennial grasses</b>			
Poaceae	<i>Achnatherum hymenoides</i>	indian ricegrass	1, 3, 4, 6, 7, 10
	<i>Bouteloua gracilis</i>	blue grama	1, 6, 10
	<i>Distichlis spicata</i>	Saltgrass	1
	<i>Elymus elymoides</i>	bottlebrush squirreltail	1, 3, 4, 6, 7, 10
	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	thickspike wheatgrass	6
	<i>Hesperostipa comata</i>	needle-and-thread	1, 6
	<i>Leymus ambiguus</i>	Colorado wildrye	1
	<i>Leymus salinus</i>	saline wildrye	1, 2, 3, 4, 6
	<i>Muhlenbergia torreyi</i>	ring muhly	1
	<i>Pascopyrum smithii</i>	western wheatgrass	1, 6
	<i>Pleuraphis jamesii</i>	Galleta	1, 2, 3, 4, 6, 9, 10
	<i>Poa secunda</i>	Sandburg bluegrass	1, 2, 3, 4, 7
<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	1, 6	

Table S1 continued

<b>Family</b>	<b>Species</b>	<b>Common name</b>	<b>Reference</b>
Poaceae	<i>Sporobolus airoides</i>	alkali sacaton	1, 6, 10
	<i>Sporobolus cryptandrus</i>	sand dropseed	1, 3, 7, 10, 11
<b>Shrubs</b>			
Asteraceae	<i>Artemisia frigida</i>	prairie sagewort	1
	<i>Artemisia longifolia</i>	longleaf wormwood	6
	<i>Artemisia nova</i>	black sagebrush	10
	<i>Artemisia pedatifida</i>	birdfoot sagebrush	6
	<i>Artemisia tridentata</i>	big sagebrush	1, 2, 3, 4, 10, 12
	<i>Chrysothamnus greenii</i>	Greene's rabbitbrush	2, 3, 4
	<i>Ericameria nauseosa</i>	Rabbitbrush	1 - 4, 9, 12
	<i>Gutierrezia sarothrae</i>	broom snakeweed	1, 2, 3, 4
	<i>Picrothamnus desertorum</i>	bud sagebrush	1, 2, 4, 6, 10, 11
	<i>Tetradymia spinosa</i>	shortspine horsebrush	2, 3, 4
Chenopodiaceae	<i>Atriplex canescens</i>	four-wing saltbush	1, 6
	<i>Atriplex confertifolia</i>	Shadscale	1, 2, 3, 4, 9, 10, 11, 12
	<i>Atriplex corrugata</i>	mat saltbush	2, 3, 4, 6, 9, 10, 12
	<i>Atriplex cuneata</i>	Castle Valley clover	6, 10
	<i>Atriplex gardneri</i>	Gardner's saltbush	2, 3, 4, 6, 7, 9, 10, 12, 13
	<i>Atriplex obovata</i>	mound saltbush	1

Table S1 continued

<b>Family</b>	<b>Species</b>	<b>Common name</b>	<b>Reference</b>
Chenopodiaceae	<i>Bassia americana</i>	green molly	10
	<i>Grayia spinosa</i>	spiny hopsage	10, 14
	<i>Krascheninnikovia lanata</i>	Winterfat	1, 2, 3, 4, 6, 7, 10, 11
	<i>Sarcobatus vermiculatus</i>	Greasewood	1, 9, 10, 12
	<i>Suaeda moquinii</i>	alkali seepweed	1
Ephedraceae	<i>Ephedra</i> spp.	mormon tea	1, 2
	<i>Ephedra torreyana</i>	Torrey's jointfir	4
Polygonaceae	<i>Eriogonum bicolor</i>	pretty buckwheat	2
	<i>Eriogonum contortum</i>	grand buckwheat	8

## References:

- |                          |                                  |
|--------------------------|----------------------------------|
| 1. CNHP 2005b            | 8. Ackerfield 2013               |
| 2. Lusby et al. 1963     | 9. Lusby 1970                    |
| 3. Knipe 1966            | 10. Blaisdell and Holmgren 1984  |
| 4. Turner 1971           | 11. Chambers and Norton 1993     |
| 5. Ungar 1983            | 12. Lusby 1979                   |
| 6. CNHP 2006a            | 13. Ansley and Abernethy 1983    |
| 7. Smith and Hanlon 2010 | 14. Alzerreca-Angelo et al. 1998 |

Table S2. Species and seeding rates (if known) for seed mixes sown as part of western Colorado salt desert restoration on surveyed sites. Asterisk (\*) denotes non-native species.

Site	Life form	Seeded species	Seeding rate, if known (kg PLS ha <sup>-1</sup> )
2 Road	Grass	<i>Agropyron cristatum</i> *	--
		<i>Elymus trachycaulus</i>	--
Buried pipeline	Grass (likely)	<i>Achnatherum hymenoides</i>	--
		<i>Elymus trachycaulus</i>	--
		<i>Elymus elymoides</i>	--
		<i>Hilaria jamesii</i>	--
	Grass (possible)	<i>Elymus lanceotaus lanceolatus</i>	--
		<i>Festuca arizonica</i>	--
		<i>Hesperostipa comata</i>	--
		<i>Pascopyrum smithii</i>	--
		<i>Poa secunda</i>	--
		<i>Sporobolus airoides</i>	--
Shrub (possible)	<i>Atriplex canescens</i>	--	
	<i>Atriplex confertifolia</i>	--	
Indian Wash	Forb	<i>Melilotis officinalis</i> *	--
	Grass	<i>Agropyron cristatum</i> *	--
Hwy 50 site 1	Grass	<i>Achnatherum hymenoides</i>	2.20
		<i>Elymus lanceotaus riparium</i> 'SODAR'	3.40
		<i>Hilaria jamesii</i>	2.20



		<i>Sporobolus airoides</i>	0.30
	Shrub	<i>Atriplex canescens</i>	1.10
		<i>Atriplex confertifolia</i>	1.10
Hwy 50 site 2	Grass	<i>Achnatherum hymenoides</i>	2.20
		<i>Elymus lanceotaus riparium</i> 'SODAR'	3.40
		<i>Hilaria jamesii</i>	2.20
		<i>Sporobolus airoides</i>	0.30
	Shrub	<i>Atriplex canescens</i>	1.10
		<i>Atriplex confertifolia</i>	1.10
Hwy 92	Grass	<i>Achnatherum hymenoides</i>	6.73
		<i>Pascopyrum smithii</i>	8.97
		<i>Poa secunda</i>	2.24
		<i>Puccinellia nuttalliana</i>	1.12
		<i>Sporobolus airoides</i>	2.24
		<i>Sporobolus cryptandrus</i>	1.12
Ute site and Trailheads (NCA Upper NCA Lower Wave Eagle)	Grass	<i>Achnatherum hymenoides</i>	2.24
		<i>Elymus elymoides</i>	0.90
		<i>Hilaria jamesii</i>	0.90
		<i>Pascopyrum smithii</i>	1.12
		<i>Poa secunda</i>	4.48
	Shrub	<i>Atriplex canescens</i>	0.11
		<i>Atriplex confertifolia</i>	0.45
		<i>Krascheninnikovia lanata</i>	0.11

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Table S3. Results from separate permutation multivariate analysis of variance (perMANOVA) tests for effects of disturbance, soil types, seeding, and grazing on nonmetric multidimensional scaling ordination scores for A) all transects and B) only seeded transects in western Colorado salt desert sites. ndf = numerator degrees of freedom, ddf = denominator degrees of freedom; significant *p*-values at  $\alpha = 0.10$  in bold.

<b>Fixed effect</b>	<b>ndf</b>	<b>ddf</b>	<b>F-value</b>	<b>R<sup>2</sup></b>	<b><i>p</i>-value</b>
A. All transects					
Soil type	9	80	4.75	0.35	<b>0.0001</b>
Disturbance	5	84	4.94	0.19	<b>0.0003</b>
Seeding	2	87	6.62	0.13	<b>0.0002</b>
B. Seeded transects					
Soil type	8	48	4.47	0.43	<b>0.0001</b>
Disturbance	3	53	7.92	0.31	<b>0.0001</b>

Table S4. Results from environmental fit analysis for correlation between continuous variables and nonmetric multidimensional scaling ordination scores for A) all transects and B) only seeded transects in western Colorado salt desert sites.  $t$  = year of restoration,  $t+1$  = first year after restoration. Significant  $p$ -values with  $\alpha = 0.10$  after Dunn-Sidak multiple comparison adjustment ( $\alpha'$ ) in bold: A)  $\alpha' = 0.0345$  with 3 variables, and B)  $\alpha' = 0.0105$  with 10 variables.

Variable	$R^2$	$p$ -value
A. All transects		
Time since restoration	0.25	<b>0.0001</b>
Elevation	0.02	0.5546
Slope	<0.01	0.9481
B. Seeded transects		
Time since restoration	0.46	<b>0.0001</b>
Annual precipitation <sub><math>t</math></sub>	0.08	0.3711
Annual precipitation <sub><math>t+1</math></sub>	0.07	0.4542
Maximum Temperature <sub><math>t</math></sub>	0.06	0.5033
Maximum Temperature <sub><math>t+1</math></sub>	0.11	0.2342
Elevation	0.21	0.0444
Slope	0.01	0.9766
Seed mix richness (S)	0.27	<b>0.0104</b>
Proportion native species in mix	0.40	<b>0.0004</b>
Proportion shrubs-to-grasses in mix	0.26	0.0171

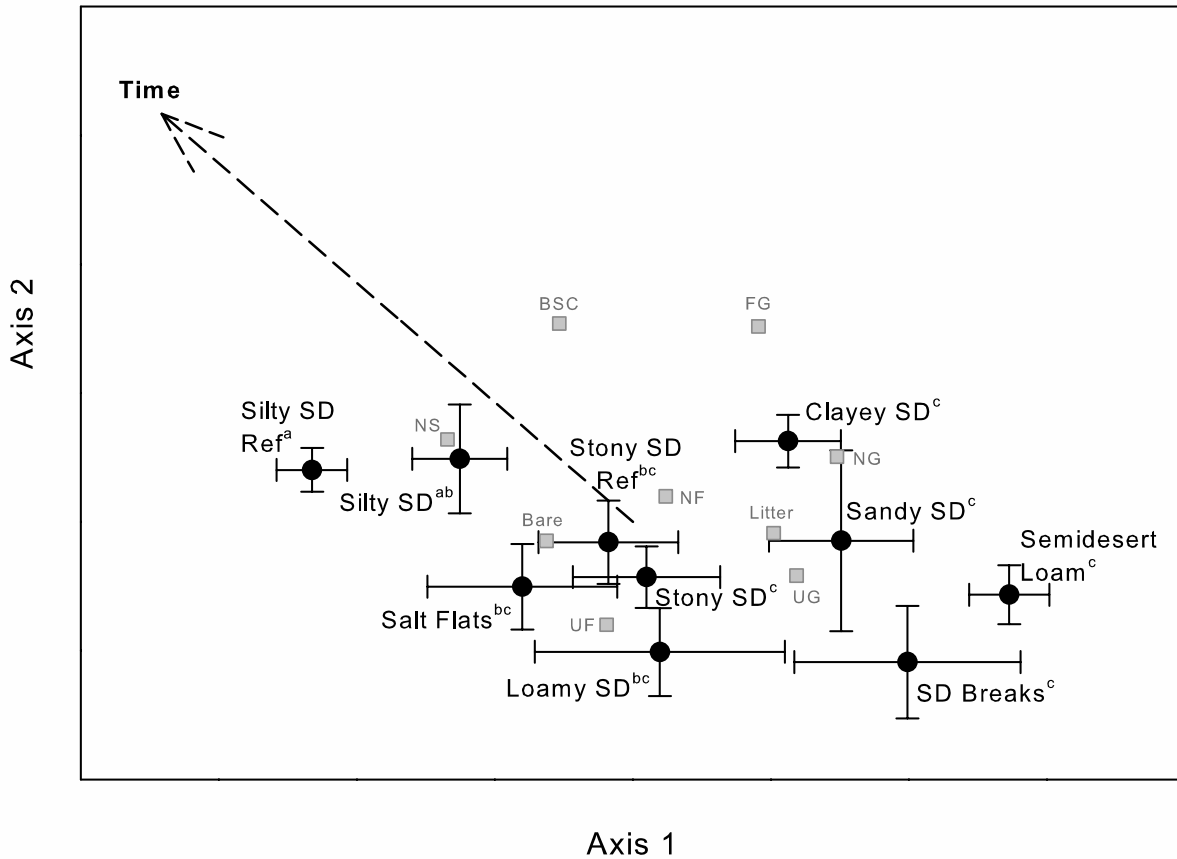


Figure S2. Average ( $\pm 1$  SE) nonmetric multidimensional scaling (NMS) axes scores based on soil types for transects surveyed (black dots) in western Colorado salt deserts. Only soil types occurring on more than one site are shown. Gray triangles indicate axes scores of cover groups: BSC = biological soil crust, bare = bareground, NS = native shrub, NF = native forb, NG = native grass, UF = undesirable forb, UG = undesirable grass, FG = non-native (forage) grass. Dotted lines indicate significant correlations between continuous explanatory variables and NMS ordination scores. Transect NMS scores followed by the same letter do not differ significantly at  $\alpha = 0.10$ .

Table S5. Native plant species used in restoration or seeding trials in salt desert sites with at least limited success and notes regarding conditions in which species are likely to perform best (if any) with reference to the literature source(s). PLS = pure live seed.

Species	Notes relevant to restoration**	Refs**
<b>Perennial forbs</b>		
<i>Achillea millefolium</i>	--	10, 12
<i>Eriogonum umbellatum</i>	--	10
<i>Glycyrrhiza lepidota</i>	--	3
<i>Linum lewisii</i>	--	3, 10
<i>Sphaeralcea coccinea</i>	<ul style="list-style-type: none"> <li>• Saline uplands<sup>1</sup></li> <li>• Some drought tolerance<sup>1</sup></li> </ul>	1, 10, 12
<i>Sphaeralcea grossulariifolia</i>	--	3, 12
<b>Perennial grasses</b>		
<i>Achnatherum hymenoides</i>	<ul style="list-style-type: none"> <li>• Summer<sup>1</sup> or spring seeding better than fall seeding<sup>2</sup></li> <li>• Drill seed<sup>14</sup></li> <li>• Saline uplands<sup>1,17</sup></li> <li>• Highly drought tolerant<sup>14</sup></li> </ul>	1, 3, 10, 11, 12, 14
<i>Bouteloua gracilis</i>	<ul style="list-style-type: none"> <li>• Seed late fall or early spring<sup>14</sup></li> <li>• Drill seed<sup>14</sup></li> <li>• Low germination<sup>14</sup></li> </ul>	3, 14
<i>Elymus elymoides</i>	<ul style="list-style-type: none"> <li>• Spring or fall planting<sup>2</sup></li> <li>• Saline uplands<sup>1,17</sup></li> </ul>	1, 3, 10, 12
<i>Hesperostipa comata</i>	<ul style="list-style-type: none"> <li>• Spring or fall planting<sup>2</sup></li> </ul>	3, 10
<i>Leymus cinereus</i>	--	3, 10
<i>Leymus salinus</i>	--	3, 10, 12

<b>Species</b>	<b>Habitat and notes relevant to restoration**</b>	<b>Refs**</b>
<i>Pascopyrum smithii</i>	<ul style="list-style-type: none"> <li>• Seed late fall or early spring<sup>14</sup></li> <li>• Drill seed<sup>14</sup></li> </ul>	10, 12, 14
<i>Pleuraphis jamesii</i>	--	10
<i>Poa secunda</i>	<ul style="list-style-type: none"> <li>• Seed in fall<sup>14</sup> or spring<sup>1</sup></li> <li>• Saline uplands<sup>1</sup></li> </ul>	1, 10, 12, 14
<i>Sporobolus cryptandrous</i>	<ul style="list-style-type: none"> <li>• Seed early summer<sup>14</sup></li> <li>• Saline uplands<sup>1</sup></li> <li>• Drought tolerant<sup>1</sup></li> <li>• Drill seed<sup>14</sup></li> </ul>	1, 3, 10, 11, 12, 14
<i>Sporobolus airoides</i>	<ul style="list-style-type: none"> <li>• Alkali bottoms, salt meadows<sup>14</sup></li> <li>• Prefer uplands<sup>17</sup></li> <li>• Drill seed<sup>14</sup></li> </ul>	3, 10, 14
<b>Shrubs</b>		
<i>Artemisia nova</i>	<ul style="list-style-type: none"> <li>• Seed in spring<sup>14</sup></li> <li>• Wildlings and seedlings readily transplant<sup>14</sup></li> <li>• Low salinity/alkalinity<sup>3</sup></li> <li>• Good drought tolerance<sup>14</sup></li> <li>• Likely does well on fresh disturbances<sup>14</sup></li> </ul>	3, 12, 14
<i>Artemisia tridentata</i>	<ul style="list-style-type: none"> <li>• Seed in fall<sup>2</sup></li> <li>• Transplant wildlings or seedlings in spring<sup>14</sup></li> <li>• Alluvial soils<sup>4</sup></li> <li>• Most ecotypes low salt tolerance<sup>3,5</sup>, higher in others<sup>6</sup></li> <li>• Good drought tolerance<sup>14</sup></li> </ul>	3, 12, 14

Species	Habitat and notes relevant to restoration **	Refs **
<i>A. tridentata</i> (continued)	<ul style="list-style-type: none"> <li>Likely does well on fresh disturbances<sup>14</sup></li> </ul>	
<i>Atriplex canescens</i>	<ul style="list-style-type: none"> <li>Propagation by seed, stem cutting, transplant<sup>3,16,19</sup></li> <li>Seed in fall<sup>12</sup>, winter<sup>16</sup> or spring to mid-summer<sup>2, 7, 14</sup></li> <li>Bury seed at least 0.6cm<sup>12</sup> but no more than 1.2cm<sup>16</sup></li> <li>If seeding with drill, alternate rows with grasses<sup>12,16</sup></li> <li>Transplants may<sup>19</sup> or may not<sup>14</sup> be successful</li> <li>High ecotypic variation<sup>7, 12</sup></li> <li>Good drought tolerance<sup>16</sup></li> <li>Low-medium<sup>16,18</sup> to high salt tolerance<sup>14</sup></li> <li>Likely does well on fresh disturbances<sup>14</sup></li> </ul>	11, 12,14, 16, 19
<i>Atriplex confertifolia</i>	<ul style="list-style-type: none"> <li>Seed in fall<sup>1,15</sup>, winter<sup>12</sup>, or spring<sup>2</sup></li> <li>Low seed viability<sup>12,16</sup>; dormancy hard to break<sup>1,12,16</sup></li> <li>If seeding with drill, alternate rows with grasses<sup>12,16</sup></li> <li>Bury seed 6.4 – 12.7 mm<sup>16,19</sup></li> <li>2.2 – 4.5 kg PLS ha<sup>-1</sup> recommended seeding rate<sup>16</sup></li> <li>Transplant in fall<sup>16</sup> or spring<sup>14,16</sup>, when dormant<sup>16</sup></li> <li>Clear competitors from 38.1 cm area around transplants<sup>16</sup></li> <li>Seedlings mature in 3 – 8 years in the field<sup>16</sup></li> <li>Seeds and seedlings do best when sourced from planting site<sup>16</sup></li> <li>Shallow<sup>18</sup> soils to saline<sup>1,17,18</sup> and/or sandy uplands<sup>4,18</sup></li> </ul>	1, 3, 11, 12, 14, 16

Species	Habitat and notes relevant to restoration**	Refs**
<i>A. confertifolia</i> (continued)	<ul style="list-style-type: none"> <li>• Often with <i>Pl. jamesii</i> in intact stands<sup>4,18</sup></li> <li>• Good drought<sup>14</sup> and high salt tolerance<sup>5,16</sup></li> <li>• Likely does well on fresh disturbances<sup>14</sup></li> </ul>	
<i>Atriplex corrugata</i>	<ul style="list-style-type: none"> <li>• Seed in fall or winter<sup>16</sup></li> <li>• Bury seed lightly to no more than 1.3 cm deep<sup>16</sup></li> <li>• 2.2 – 4.5 kg PLS ha<sup>-1</sup> recommended seeding rate<sup>16</sup></li> <li>• Transplants well as bare root stock, wildings, or container stock<sup>16</sup></li> <li>• Only plant on sites where it naturally occurred<sup>16</sup></li> <li>• Alkaline flats<sup>4</sup> and uplands<sup>16,18</sup></li> <li>• Medium to high salt tolerance<sup>16,18</sup></li> <li>• Prostrate growth form; good erosion control<sup>3</sup></li> </ul>	3, 12, 16
<i>Atriplex cuneata</i>	<ul style="list-style-type: none"> <li>• Low seed viability<sup>16</sup>; dormancy hard to break<sup>16</sup></li> <li>• If seeding with drill, alternate rows with grasses<sup>16</sup></li> <li>• Only plant on sites where it naturally occurred<sup>16</sup></li> <li>• Does well on fresh disturbances<sup>16</sup></li> <li>• Prefers uplands<sup>17,18</sup></li> </ul>	3, 12, 16
<i>Atriplex gardneri</i>	<ul style="list-style-type: none"> <li>• Seed in fall<sup>16</sup></li> <li>• Seeds must be scarified and stratified<sup>16</sup></li> <li>• Saline<sup>1,17</sup> and/or clay uplands<sup>4,17</sup></li> <li>• Seed dormancy difficult to break<sup>8</sup></li> <li>• Low seedling vigor<sup>16</sup></li> </ul>	1, 3, 12, 16



<b>Species</b>	<b>Habitat and notes relevant to restoration**</b>	<b>Refs**</b>
<i>A. obovata</i>	<ul style="list-style-type: none"> <li>• Low to moderate salt tolerance<sup>16,18</sup></li> <li>• Seeds should be after-ripened<sup>16</sup></li> <li>• Transplants well<sup>16</sup></li> </ul>	16
<i>Atriplex tridentata</i>	<ul style="list-style-type: none"> <li>• Seed in fall<sup>16</sup></li> <li>• Transplant well as bare root or container stock<sup>16</sup></li> <li>• Prefer uplands<sup>17</sup></li> </ul>	16
<i>Bassia americana</i>	<ul style="list-style-type: none"> <li>• Prefer uplands<sup>17</sup></li> </ul>	16
<i>Chrysothamnus depressus</i>	--	11
<i>Chrysothamnus viscidiflorus</i>	<ul style="list-style-type: none"> <li>• Transplants do poorly<sup>14</sup></li> <li>• Low salinity/alkalinity<sup>3</sup></li> <li>• Good drought tolerance<sup>14</sup></li> <li>• Likely does well on fresh disturbances<sup>14</sup></li> </ul>	3, 14
<i>Ericameria nauseosa</i>	<ul style="list-style-type: none"> <li>• Transplants do poorly<sup>14</sup></li> <li>• Low salinity/alkalinity<sup>3</sup></li> <li>• Alluvial soils<sup>4</sup></li> <li>• Seedlings sensitive to frost and drought<sup>14</sup></li> <li>• Likely does well on fresh disturbances<sup>14</sup></li> </ul>	3, 14
<i>Grayia spinosa</i>	<ul style="list-style-type: none"> <li>• Seed late fall<sup>16</sup></li> <li>• Seed in competition-free seedbeds<sup>16</sup></li> <li>• Seedlings do best when sourced from planting site<sup>16</sup></li> <li>• Prefer uplands<sup>17</sup></li> <li>• Low salt tolerance<sup>16</sup></li> <li>• Often on high calcium soil<sup>16</sup></li> </ul>	3, 12, 16

Species	Habitat and notes relevant to restoration**	Refs**
<i>Krascheninnikovia lanata</i>	<ul style="list-style-type: none"> <li>• Surface seed in fall with bracts intact<sup>12</sup></li> <li>• Dry after-ripen seed<sup>16</sup></li> <li>• Seed should be covered but &lt; 6.4 mm deep<sup>16,19</sup></li> <li>• If seeding with drill, alternate rows with grasses<sup>12,16</sup></li> <li>• 1.1 kg ha<sup>-1</sup> recommended drill seeding rate<sup>16</sup></li> <li>• Transplants well as bare root or container stock<sup>16,19</sup></li> <li>• Transplant in spring<sup>16</sup></li> <li>• Seedling susceptible to frost damage<sup>16</sup></li> <li>• Saline uplands<sup>1,17</sup></li> <li>• Moderate salt tolerance<sup>5,9,16</sup></li> </ul>	1, 3, 11, 12, 16
<i>Picrothamnus desertorum</i>	<ul style="list-style-type: none"> <li>• Seedlings grow slowly<sup>12</sup></li> <li>• Low salinity/alkalinity tolerance<sup>3</sup></li> <li>• Prefer uplands<sup>17</sup></li> </ul>	3, 12
<i>Sarcobatus vermiculatus</i>	<ul style="list-style-type: none"> <li>• Seed late fall to late winter<sup>12,16</sup></li> <li>• Low seed viability<sup>16</sup></li> <li>• If seeding with drill, alternate rows with grasses<sup>16</sup></li> <li>• Transplant in spring<sup>14</sup></li> <li>• Likely does well on fresh disturbances<sup>14</sup></li> <li>• Often on clay-textured soils, valley bottoms with high subsurface moisture<sup>16,17</sup></li> <li>• Low to high salt tolerance<sup>16</sup></li> </ul>	12, 14, 16

<b>Species</b>	<b>Habitat and notes relevant to restoration**</b>	<b>Refs**</b>
<i>Zuckia branegei</i>	<ul style="list-style-type: none"> <li>• Low seed viability, but viable seed germinates readily<sup>16</sup></li> <li>• Transplants well<sup>16</sup></li> <li>• Seedlings highly palatable to small mammals<sup>16</sup></li> <li>• Useful for stabilizing shale-derived soils<sup>16</sup></li> <li>• Shale of the Upper Colorado River drainage<sup>16</sup></li> <li>• Moderately alkaline sites<sup>16</sup></li> </ul>	16

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\*Can have annual life cycle (NRCS 2015)

\*\*References:

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