

THE URBAN WILDLANDS GROUP, INC.

P.O. BOX 24020, LOS ANGELES, CALIFORNIA 90024-0020, TEL (310) 276-2306

Report on Southern Dune and Bluff Scrub Revegetation at Torrance Beach

Travis Longcore, Rudi Mattoni, and Sarah Casia

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Following the construction of new vehicular and pedestrian access ramps at Torrance Beach a 0.7-acre site was designated for revegetation with native plants. The site was provided to The Urban Wildlands Group in April of 2003 covered with plastic sheeting. This report documents the revegetation actions taken through the Spring of 2004, under the direction of Dr. Rudi Mattoni.

This site is along Paseo de la Playa in Redondo Beach, and is near the southern terminus of the publicly owned bluffs. Approximately 1,200 feet to the south, on private property, is a small colony of the federally endangered El Segundo blue butterfly. All of the adjacent areas are dominated by iceplant (*Carpobrotus edulis*), as was the site before construction began. This area is under study for a larger voluntary restoration effort as part of the Beach Bluffs Restoration Project. A map from that planning effort illustrates the site (#3) as well as two other sites that are currently under restoration as a pilot project for that effort (#8 and #9; Figure 1)



Figure 1. Beach Bluffs Restoration Project map illustrating southern Redondo Beach. North is to the right of the map.

A temporary irrigation system consisting of 3/4-inch tubing and Hunter sprinkler heads was installed. The tubes and valves were buried or covered to reduce the probability of vandalism. The site was irrigated sufficient to wet the soil to a depth of 18 inches and container plants were installed in October 2003, with subsequent plantings added through March 2004 as needed. In addition, a cover crop of native *Festuca* grass was sown, along with seeds of native wildflowers.

The site was weeded periodically through Spring 2004, with the dominant weeds being annual species such as ox tongue, sow thistle, and several grass species. Of greater concern were

perennial weeds, including Bermuda grass (which was eliminated with a small application of herbicide before plant installation), and iceplant (both *Carpobrotus* and *Mesembryanthemum*). Annual weeds are essentially not controllable through manual weeding because of the ubiquitous seed sources. They will decline as native shrubs eliminate the conditions necessary for their germination.

Irrigation was continued as necessary to keep the soil moist during the Winter and Spring.

Planting Plan

This list of species planted on site was modified from those originally proposed, based on soil conditions at the site, which were less sandy than expected in places, and based on availability of seeds for propagation. Table 1 lists those plants that were installed at the site and their quantities, while Table 2 lists the plant species that would be appropriate to add to the site if and when propagules are available. In addition to the plants listed here, several species germinated from the seedbank on the site, including beach bur (*Ambrosia chamissonis*), annual lotus (*Lotus strigosus*), wand chicory (*Stephanomeria virgata*), and the coastal, prostrate form of deerweed (*Lotus scoparius*),

Table 1. Species planted at Torrance beach revegetation site, arranged by planting density. Zones: A – sandier, less consolidated soils, B – loamier, more consolidated soils.

Latin Name	Common Name	Zone	10/21/03	11/15/03	12/22/03	3/15/04	Total
<u>Perennials</u>							
<i>Eriogonum parvifolium</i>	COAST BUCKWHEAT	AB	261	25		80	365
<i>Eschscholtzia californica</i>	CALIFORNIA POPPY	AB	25	10		150	185
<i>Camissonia chieranthifolia</i>	BEACH EVENING PRIMROSE	A	150	25			175
<i>Salvia mellifera</i>	BLACK SAGE	B	40	20			60
<i>Artemisia californica</i>	CALIFORNIA SAGEBRUSH	B	40	20			60
<i>Encelia californica</i>	CALIFORNIA SUNFLOWER	B	36	10			46
<i>Galium angustifolium</i>	BEDSTRAW	AB	35	8			43
<i>Corethrogyne filaginifolia</i>	CALIFORNIA ASTER	B	15			25	40
<i>Erysimum insulare suffrutescens</i>	SUFFRUTESCENT WALLFLOWER	AB	10	2		17	39
<i>Lupinus chamissonis</i>	DUNE LUPINE	AB	24	12			36
<i>Phacelia ramosissima</i>	BRANCHING PHACELIA	AB	25	10			35
<i>Lotus scoparius</i>	DEERWEED	B	30				30
<i>Opuntia littoralis</i>	PRICKLY PEAR	B	22				22
<i>Senecio douglasii</i>	BUTTERWEED	B	10	10			20
<i>Astragalus trichopodus lonchus</i> [= <i>A. leucopsis</i>]	COAST LOCOWEED	B				20	20
<i>Nasella cernua</i> [= <i>Stipa cernua</i>]	NODDING NEEDLEGRASS	B	20				20
<i>Mirabilis laevis</i>	FOUR O'CLOCK	B	14				14
<i>Opuntia prolifera</i>	COAST CHOLLA	B	10				10
<i>Isomeris arboria</i>	BLADDERPOD	B	7	2			9

<i>Ambrosia chamissonis</i>	BEACH BUR	B	6	2		8
<i>Abronia umbellatum</i>	SAND VERBENA	A	4		2	6
<i>Baccharis pilularis</i>	COYOTE BUSH	B			5	5
<i>Cucurbita foetidissima</i>	CALABAZILLA	AB	4			4
<i>Artemisia dracuncululus</i>	MUGWORT	B	2			2
<i>Rhus integrifolia</i>	LEMONADEBERRY	B			2	2
<i>Gnaphalium californicum</i>	CALIFORNIA PEARLY EVERLASTING	B	2			2
<i>Baccharis salicifolia</i>	MULE FAT	B	1			1
<i>Dudleya lanceolata</i>	LANCE-LEAF LIVEFOREVER	B				
<i>Dudleya virens</i>	BRIGHT-GREEN DUDLEYA	B				
Annuals						
<i>Festuca megalura</i>	FOXTAIL FESCUE	AB	4 lb	1 lb	1.5 lb	6.5 lb
<i>Chaenactis glabriuscula</i>	PINCUSHION FLOWER	AB	4 oz		1 oz	5 oz
<i>Clarkia pupurea</i>	PURPLE CLARKIA	B	4 oz			4 oz
<i>Lupinus bicolor</i>	TWO-TONE LUPINE	AB	2 oz		1 oz	3 oz
<i>Lupinus succulentus</i>	SUCCULENT LUPINE	AB	1 oz	1 oz	1 oz	3 oz
<i>Lupinus truncatus</i>	TRUNCATED LUPINE	AB	2 oz			2 oz
<i>Bromus carinatus</i>	CALIFORNIA BROME	B			1 oz	1 oz
<i>Lepidium lasiocarpum</i>	PEPPERGRASS	AB	1 oz			1 oz
<i>Heterotheca grandiflora</i>	TELEGRAPH WEED	AB			1 oz	1 oz
<i>Cryptantha intermedia</i>	COMMON CRYPTANTHA	AB			1 oz	1 oz
<i>Salvia columbariae</i>	CHIA	A	1 oz			1 oz
<i>Camissonia micrantha</i>	SMALL EVENING PRIMROSE	AB	0.5 oz			0.5 oz
<i>Crassula erecta</i>	PIGMYWEED	AB	0.5 oz			0.5 oz
<i>Eremocarpus setigerus</i>	TURKEY MULLEIN	AB	0.5 oz			0.5 oz

Table 2. Plant species that would be appropriate to add to Torrance site in the future.

Latin Name	Common Name	Zone
<i>Abronia maritima</i>	SAND VERBENA	A
<i>Ericameria [=Haplopappus] ericoides</i>	GOLDENBUSH	B
<i>Gnaphalium bicolor</i>	TWO-TONE EVERLASTING	AB
<i>Calandrinia maritima</i>	SEASIDE REDMAIDS	AB
<i>Marah macrocarpus</i>	WILD CUCUMBER	B
<i>Calyptridium monandrum</i>	SAND CRESS	A
<i>Descurainaea pinnata</i>	TANSY MUSTARD	B
<i>Dithyrea maritima</i>	BEACH SPECTACLEPOD	B
<i>Linaria canadensis</i>	BLUE TOADFLAX	AB
<i>Lotus purshianus</i>	SPANISH CLOVER	AB
<i>Phacelia cicutaria hispida</i>	CATERPILLAR PHACELIA	AB
<i>Plantago erecta</i>	DWARF PLANTAIN	B
<i>Calystegia macrostegia</i>	MORNING GLORY	B
<i>Calystegia soldanella</i>	MORNING GLORY	A
<i>Croton californica</i>	CALIFORNIA CROTON	AB
<i>Cuscuta californica</i>	DODDER	AB
<i>Datura wrightii</i>	JIMSON WEED	AB
<i>Distichlis spicata</i>	SALTGRASS	A

Vegetation Assessment

On August 26, 2004, eight 10-m transects were completed on the project site. Cover every 50 centimeters was recorded and the diameter of all shrubs was recorded. The transects all ran up and down the slope and were placed regularly around the perimeter of the site, five from the top of the slope and three from the bottom of the slope. The cover data were then used to calculate the Shannon diversity index (H') and the relative cover of native species, exotic species, and bare ground.

The transects showed the highest cover by *Festuca* grass (32.5%), followed by bare ground (21.9%) and *Eriogonum parvifolium* (15.6%). *Camissonia* had the next highest cover, with some plants still green and growing through the Summer. If one counts *Camissonia* as a perennial (albeit short-lived), then total native cover by perennials is 36%. Additional cover by native annuals was present during the Spring, especially from *Lupinus bicolor*, *Lupinus succulentus*, Clarkia, Chia, and *Eschscholzia californica* (although this is a short-lived perennial in this environment but dies back during the Summer). The Shannon diversity of the vegetation (excluding weed cover) is 1.8.

Table 3. Vegetative cover by species at Torrance revegetation site, August 2004, with average diameter of all perennial species.

Species	% Total	Mean Diameter	N
<i>Festuca</i> (dead)	32.5%		
Bare	21.9%		
<i>Eriogonum parvifolium</i>	15.6%	1.3	13
<i>Camissonia chieranthifolia</i>	8.8%	1.8	8
Dead unidentified	4.4%		
<i>Heterotheca grandiflora</i>	3.1%		
<i>Lotus scoparius</i>	2.5%	1.9	2
<i>Artemisia californica</i>	1.9%	0.8	3
<i>Phacelia ramosissima</i>	1.3%	0.8	1
<i>Senecio douglasii</i>	1.3%	1.3	1
<i>Isomeris arborea</i>	1.3%	1.8	1
<i>Dudleya lanceolata</i>	0.6%	0.2	1
<i>Salvia mellifera</i>	0.6%	0.3	1
<i>Eschscholzia californica</i>	0.6%	1.6	2
<i>Chaenactis glabriuscula</i>	0.6%		
<i>Lupinus succulentus</i>	0.6%		
<i>Mirabilis laevis</i>	0.6%	0.9	1
<i>Opuntia littoralis</i>	0.6%		
<i>Ghaphalium</i> sp. (dead)	0.6%		
<i>Baccharis pilularis</i>	0.6%		

By recording the diameter of each shrub that intersects the transect, the maturation and demographics of these species can be tracked over time. The average diameter of each species should increase as the shrubs mature, but a histogram of the sizes of the individuals should show small individuals in the coming years if natural recruitment is occurring. For example, right now the demographic profile for *Eriogonum parvifolium* shows most individuals 1–1.25 m in diameter, with larger individuals and a few smaller. The largest individuals were planted earliest in 2003 and the smaller ones later. Over time the profile should shift to include larger individual plants and a larger average diameter. The sustainability of this population will be shown by the growth of individuals from seed to fill the smallest size (< 1 m) classes when the container stock has grown larger than 1 m across.

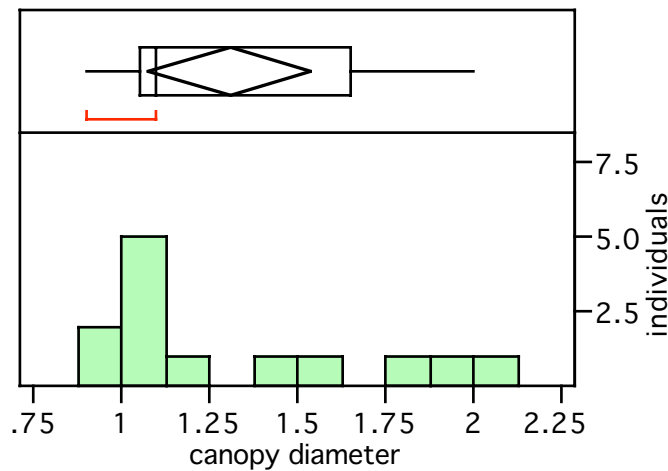


Figure 2. Histogram of canopy diameter for *Eriogonum parvifolium* plants at Torrance revegetation site.

In addition to the plants recorded on the transect, two rare species were successfully established on the site that deserve mention.

Erysimum insulare suffrutescens. This locally rare species is on the CNPS Watch List (List 4).



Dudleya virens. This succulent is rare (CNPS List 1B) on the Palos Verdes peninsula.



Photopoints

Two permanent photopoints were established, one at the southern end of the site facing north and another at the northern end of the site facing south. Digital photographs were taken from each point at regular intervals. Many of the plant species were also documented with photographs.

Table 4. Photographs from fixed points at Torrance revegetation site, April 2003–August 2004.

Looking South

April 2003



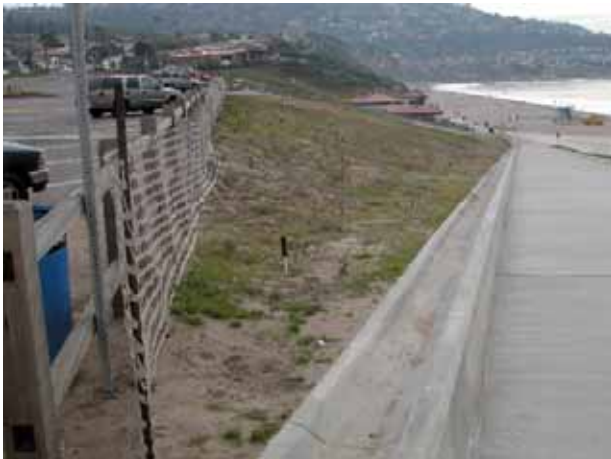
Looking North



October 2003



December 2003



March 2004



April 2004



May 2004



June 2004



August 2004



Informal Faunal Assessment

As a measure of the development of the faunal community, insect pollinators and birds were documented during five informal surveys. No surveys for El Segundo blue butterfly were completed because of the low probability of natural colonization of the site.

Native pollinators were present in high numbers and reasonable diversity, including at least three species of bumblebees (*Bombus vosnosenskii*, *Bombus sonorus*, and *Bombus californicus*), several species of solitary native bees (*Agapostemon texanus*, *Colletes* sp.), at least three species of native wasps (including parasitic pompilid wasps), in addition to butterflies and moths. The terrestrial arthropod community is likely less well developed, but the presence of native harvester ants (*Pogonomyrmex californicus*) was noted. These ants are essential food sources if coast horned lizard were to be reintroduced to the site.

The only difference in bird use compared to adjacent iceplant-dominated slopes thus far is the presence of mourning doves. These common, native birds do not use the iceplant, but are now found regularly on the revegetated site.



Figure 3. Representative arthropods observed at new vegetation. Top left: *Bombus vosnesenskii* at *Lupinus succulentus*. Top right: unidentified fly at *Chaenactis glabriuscula*. Middle left: native solitary bee (*Colletes* sp.) at *Eriogonum parvifolium*. Middle right: pompilid wasp at *Eriogonum parvifolium*. Bottom left: *Hyles lineata* (moth) larva on *Clarkia purpurea*. Bottom right: *Bombus sonorus* on *Isomeris arborea*.