Down Memory Lane: The Los Angeles Coastal Prairie and Its Vernal Pools

Rudi Mattoni, Travis Longcore, Jeremiah George and Catherine Rich

Urban Wildlands Group, UCLA Department of Geography, Box 951524, Los Angeles, California 90095–1524

Abstract

The last major remnant of the Los Angeles Coastal Prairie was a portion of a 300–acre site destroyed as habitat in the late 1960s. Unfortunately the unique community was lost before it could be thoroughly studied. The substrate, which defined the prairie, was consolidated sand of the pre–Flandrian sand dune formation established during the Pleistocene. The prairie covered about 36 square miles, extending north–south from the crest of the Ballona Bluffs to Palos Verdes and inland from the lee of the El Segundo sand dunes for three to six miles. The area was rich with vernal pools and some marshy areas. It was renowned for spectacular wildflower displays. The historical plant community of the prairie is reconstructed using herbarium records and historical sources and illustrated using anecdotal records.

Historical Description

Lay people have long recognized the unique character of the Los Angeles Coastal Prairie. The plains rolling to the sea are described in many travelers' accounts of early Los Angeles (Brewer 1930). Historian Roy Rosenberg writes of the time before the prairie was converted from ranching to dry farming in the 1800s by Inglewood founder Daniel Freeman:

> It is recorded that the Freeman children rode over the rancho through fields of wildflowers that extended to the Pacific. The sight of these fields, suddenly confronting a person as he neared the top of Baldwin Hills, brought as enthusiastic exclamations of surprise and wonder as does the present panorama which greets the traveler as he speeds over rivers of concrete en route from the metropolitan district of Inglewood. Where flowers once grew with abandon, poppies, lupin, mustard, horseradish and verbena, there now appears a sea of lights which that great raconteur, Alexander Wolcott, has aptly likened to "the babble of a million tungstens" (Rosenberg 1938).

A Manhattan Beach resident wrote of his childhood in the 1920s:

> While living at 3116 Alma, we almost always walked to school. We walked over the sanddunes, through the area where Grandview School is located, across the fields, over the railroad tracks, past the Catholic Church property. Quite often we would pick wild flowers like Lupins, Indian Paint Brush, and mustard flower, which grew everywhere, to take to our teachers (Dow 1976:27).

Although the landscape that inspired it is now largely gone, there remains a Prairie Avenue in Inglewood.

Extent and Edaphic Conditions

Based on a map developed by Cooper (1967) for his comprehensive review of the coastal sand dunes of California, this map shows the extent of the prairie and its vernal pools. The prairie was defined edaphically by pre–Flandrian dunes, which coincide with the Oakley Sand formation shown by the U.S. Bureau of Soils survey (Nelson 1919). The undrained vernal pools presumably were created by coastal ridges degraded over time. To the south, the prairie was bounded by the Palos Verdes uplift and an extensive marsh system. To the east the Torrance Plain was characterized by sage scrub, while the northern boundary was formed by the Ballona Bluffs. The western edge of the prairie was formed by the the active Flandrian sand dunes along the immediate coast. In contrast, the sand of the earlier dune system, created during the last glaciation, had become more or less consolidated, presenting the soil conditions that defined the prairie. The enormous quantities of sand contained in both dune systems were provided by alluvial sand carried by Ballona Creek, which until the 1800s was fed by the Los Angeles River.

This March 1938 photograph by W.D. Pierce shows the prairie floor. Distinguishable species and cover, based on three transects with a microscope across the photograph, include *Lupinus bicolor* (39%), *Camissonia bistorta* (18%), *Phacelia stellaris* (14%), *Lotus strigosus* (8%), *Festuca megalura* (4%), *Cryptantha intermedia* (1%) and open soil (16%).

A lush carpet of *Linanthus dianthaflorus* indicates a drying vernal pool on the prairie in a 1938 W.D. Pierce photograph. Fifteen vernal pool indicator species (Zedler 1987) were found on the prairie, including *Orcuttia californica*, *Phalaris lemmonii*, *Elatine brachysperma*, *Epilobium pygmaeum*, *Psilocarphus brevissimus* and *Navarettia prostrata*. Descriptions of collection locations on voucher specimens of these species indicate "Desiccated pools in the coastal district of Los Angeles," "Exsiccated places" in Inglewood and "On margin of vernal pool; near junction of Sepulveda Blvd. and W. Railroad, Manhattan Beach vicinity" (RSA Herbarium). Also in Manhattan Beach, "Pollywog Park" earned its name from the yearly hatch of western spadefooted toads. One highly degraded vernal pool persists in Lomita, but it is threatened by residential development. The Lomita pool harbored populations of fairy shrimp as recently as 1997.

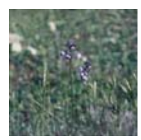
Taken by W.D. Pierce in July 1938, this photograph shows the later–growing components of the prairie community, of which *Heterotheca grandiflora*, *Mucronea californica* and *Gnaphalium canescens* ssp. *microcephalum* are distinguishable. Others included *Eriogonum gracile*, *Ambrosia acanthicarpa*, and *Eremocarpus setigerus*. Note that the community was not dominated by bunchgrasses.

Botanical Diversity

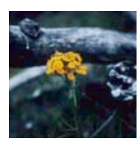
Native Plants of the Los Angeles Coastal Prairie and Its Vernal Pools. Habitats: D, dunes and prairie; P, prairie (not dunes); V, vernal pools. [1]Southern California vernal pool indicator species. [2]Vernal pool associates, found also in aquatic, marsh, or seepage areas. [3]Found in vernal pool basins, but common in other habitats (Zedler 1987). *Species or examples of genera listed by Keeley (1989) as composing pristine native California grasslands. Nomenclature according to *The Jepson Manual* (Hickman 1993).

Scientific Name	Common Name	Habitat
DICOTYLEDONES		
AIZOACEAE		
Sesuvium verrucosum	Western Sea–Purslane	V
APIACEAE		
Apiastrum angustifolium		P
Eryngium aristulatum parishii	San Diego Button–Celery	V[1]
ASTERACEAE		
Achyrachaena mollis	Blow–Wives	P[3]
Ambrosia acanthicarpa	Annual Bur–Sage	P
Ambrosia psilostachya	Western Ragweed	P
Aster subulatus var. *ligulatus*	Aster	V
Baccharis emoryi		V
Blennosperma nanum		V[1]
Chaenactis glabriuscula	Yellow Pincushion	D*
Corethrogyne filaginifolia var. *virgata* [*Lessingia f., C. virgata*]	California–Aster	D
Filago californica	Herba Impia	D[3]
Gnaphalium decurrens		D
Gnaphalium canescens ssp. *microcephalum*	Cudweed, Everlasting	P
Gnaphalium palustre		V[1]
Grindelia camporum var. *bracteosum*	Gumplant	P[3]
Hemizonia fasciculata [*Deinandra f.*]	Tarplant, Tarweed	P*[3]
Heterotheca grandiflora	Telegraph Weed	D
Heterotheca villosa [*Chrysopsis fastigiata*]		D
Isocoma menziesii var. *vernonioides* [*Haplopappus venetus* ssp. *vernonioides*]	Goldenbush	P
Lasthenia californica	Goldfields	P*
Lasthenia glabrata coulteri	Goldfields	V*
Layia platyglossa	Tidy–Tips	P*
Malacothrix saxatilis		D
Micropus californicus	Slender Cottonweed	P
Psilocarphus brevissimus	Woolly–Heads	V[1]
Psilocarphus tenellus	Woolly–Heads	V[1]
Rafinesquia californica	California Chicory	D
Senecio californicus	Ragwort	D
Stebbinsoseris heterocarpa [*Microseris h.*]		P
Stephanomeria exigua coronaria		D
Stephanomeria virgata [*Ptiloria v.*]		D
BORAGINACEAE		
Amsinckia spectabilis	Fiddleneck	D*
Cryptantha clevlandii florosa		D*
Cryptantha intermedia		P*
Cryptantha muricata		D*
Heliotropium curassavicum var. *oculatum*	Heliotrope	D
Pectocarya linearis ssp. *ferocula*		P
Plagiobothrys canescens		P*
Plagiobothrys nothofulvus	Popcornflower	P*
Plagiobothrys trachycarpus [*Allocarya t.*]	Popcornflower	V*
BRASSICACEAE		
Erysimum insulare [*E. angustata*]	Wallflower	D
Hutchinsia procumbens [*Hymenolobus p.*]		V
Lepidium dictyotum [*L. acutidens*]	Peppergrass	V
Lepidium latipes	Peppergrass	V[3]
Lepidium nitidum	Peppergrass	P[3]
Sibara virginica [*Arabis v.*]		V[1]
CALLITRICHACEAE		
Callitriche marginata	Water–Starwort	V[1]
CARYOPHYLLACEAE		
Cardionema ramosissimum		P
Loeflingia squarrosa		D
Polycarpon depressum	Polycarp	V
Spergularia marina	Sand–Spurrey	D[3]
CHENOPODIACEAE		
Atriplex lentiformis [*A. breweri*]	Big Saltbush	P
CONVOLVULACEAE		
Calystegia macrostegia [*Convolvulus m.*]	Morning–Glory	D
Cressa truxillensis	Alkali Weed	V[2]
CRASSULACEAE		
Crassula connata [*C. erecta, Tillaea minima*]	Pygmy–Weed	D
CUCURBITACEAE		
Cucurbita foetidissima	Calabazilla	D
CUSCUTACEAE		
Cuscuta californica	Dodder	D
ELATINACEAE		
Elatine brachysperma	Waterwort	V[1]
EUPHORBIACEAE		
Chamaesyce albomarginata	Prostrate Spurge	D
Croton californicus		D
Eremocarpus setigerus	Turkey Mullein	P*[3]
FABACEAE		
Astragalus didymocarpus var. *milesianus*	Two–seeded Milkvetch	P*
Astragalus tener titi	Coastal Dunes Milkvetch	P*
Astragalus trichopodus lonchus [*A. leucopsis*]		D*
Lotus purshianus [*L. americanus, L. unifoliolatus*]		P*
Lotus salsuginosus		P
Lotus scoparius	Deerweed	D*
Lotus strigosus		D*
Lupinus bicolor	Miniature Lupine	D*
Lupinus truncatus		D*
Trifolium gracilentum	Clover	P*
FRANKENIACEAE		
Frankenia salina [*F. grandifolia*]	Alkali Heath	V[2]
HYDROPHYLLACEAE		
Phacelia distans		P*
Phacelia stellaris [*P. douglasii* var. *cryptantha*]	Brand's Phacelia	P*
LAMIACEAE		
Salvia carduacea	Thistle Sage	D
Salvia columbariae	Chia	P
Stachys ajugoides	Hedge Nettle	V[2]
LIMNANTHACEAE		
Limnanthes douglasii	Meadowfoam	V
LOASACEAE		
Mentzelia affinis	Blazing Star	D
MALVACEAE		
Malvella leprosa [*Sida hederaca*]	Alkali–Mallow	V[2]
Sidalcea malviflora malviflora	Checker Mallow	P*
Sidalcea neomexicana [*S. parviflora*]		V
ONAGRACEAE		
Camissonia bistorta	California Sun Cup	P*
Camissonia cheiranthifolia	Beach Evening Primrose	D*
Camissonia lewisii	Lewis' Evening Primrose	D*
Camissonia micrantha		D*
Epilobium pygmaeum [*Boisduvalia glabella*]	Fireweed	V[1]
Oenothera elata hirsutissima	Evening Primrose	P
PAPAVERACEAE		
Eschscholzia californica	California Poppy	D*
Platystemon californicus	Cream Cups	P*
PLANTAGINACEAE		
Plantago elongata [*P. bigelovii*]	Plantain	P*[3]
Plantago erecta [*P. hookeriana*]	Dwarf Plantain	P*[3]
POLEMONIACEAE		
Gilia angelensis		P
Gilia capitata abrotanifolia		P
Linanthus dianthiflorus		P*
Navarretia prostrata		V[1]
POLYGONACEAE		
Eriogonum gracile	Wild Buckwheat	P*
Mucronea californica [*Chorizanthe c.* var. *suksdorfii*]	California Spineflower	D*
Rumex hymenosepalus	Wild–Rhubarb	D
PORTULACACEAE		
Calandrinia ciliata [*C. caulescens, C. menziesii*]	Red Maids	P*
RANUNCULACEAE		
Ranunculus californicus	Buttercup	P*[3]
ROSACEAE		
Horkelia cuneata		D
SCROPHULARIACEAE		
Antirrhinum nuttallianum	Snapdragon	P
Castilleja exserta [*Orthocarpus purpurascens*]	Purple Owl's–Clover	P*
Linaria canadensis var. *texana*	Blue Toadflax	P
Veronica peregrina	Purslane Speedwell	P[2]
SOLANACEAE		
Datura wrightii [*D. meteloides*]	Jimson Weed	D
Petunia parviflora		V[1]
VERBENACEAE		
Verbena bracteata		V
MONOCOTYLEDONES		
CYPERACEAE		
Cyperus eragrostis	Nutsedge	V
Cyperus esculentus	Nutsedge	V
Eleocharis acicularis	Spikerush	V[2]
Eleocharis macrostachya	Spikerush	V[2]
IRIDACEAE		
Sisyrinchium bellum	Blue–Eyed Grass	P
JUNCACEAE		
Juncus balticus		V
Juncus bufonius	Toad Rush	V[2]
Juncus mexicanus		V[2]
Juncus phaeocephalus		V[2]
LEMNACEAE		
Lemna gibba	Duckweed	V[2]
LILAEACEAE		
Bloomeria crocea [*B. aurea*]	Common Goldenstar	P*
Calochortus catalinae	Catalina Mariposa–Lily	P
Dichelostemma capitatum [*Brodiaea pulchella*]	Blue Dicks	D*
POACEAE		
Alopecurus saccatus [*A. howellii, A. californicus*]	Foxtail	V[1]
Bromus carinatus	California Brome	D
Deschampsia danthonioides	Annual Hairgrass	V[1]
Distichlis spicata	Saltgrass	P[2]
Elymus triticoides [*Leymus t.*]		D
Festuca megalura [*Vulpia microstachys hirsuta*]	Fescue	D[3]
Hordeum intercedens	Barley	V
Koeleria macrantha [*K. cristata*]	Junegrass	P*
Leptochloa uninervia	Mexican Sprangletop	V
Orcuttia californica	California Orcutt Grass	V[1]
Phalaris lemmonii		V[1]
Stipa cernua [*Nassella c.*]	Nodding Needlegrass	P*

Purple Owl's–Clover (*Castilleja exserta*), Goldfields (*Lasthenia* sp.), and *Pectocarya* sp. as they might have appeared together on the Los Angeles Coastal Prairie.



Blue Toadflax (*Linaria canadensis*), one of many annuals of the prairie.



A wallflower (*Erysimum* sp.) similar to the one found on the prairie.

The endangered Quino checkerspot butterfly was found on the prairie; Dwarf Plantain (*Plantago erecta*) was its principal larval foodplant.

Restoration Efforts

The most significant remnant fragment of the prairie is 30 acres, located in the lee of the El Segundo dunes at the Los Angeles International Airport (LAX). Preliminary restoration efforts were undertaken by Mattoni for the least disturbed areas from 1988–1994. Non–native plants were cleared by hand. Three of the extirpated annuals of the prairie floor were successfully reintroduced from local stock: *Phacelia distans*, *Castilleja exserta* and *Plantago erecta*. The restoration project led by Mattoni was terminated in 1994 when LAX hired a consultant to explore expansion of the airport; access to the site for further research has not been allowed.

The description and historical composition of the coastal prairie is important to future restoration efforts. Because of published errors about the historical extent of the El Segundo dunes, some restoration efforts have attempted to re–establish dune vegetation across areas of the prairie. The description of the Los Angeles Coastal Prairie given here should inform restoration efforts, as well as aid in the identification of previously overlooked fragments of these habitats in the urban mosaic.

Literature Cited

Brewer, W.H. 1930. *Up and Down California: The Journal of William H. Brewer*. New Haven, Yale University Press.

Cooper, W.S. 1967. *Coastal Dunes of California*. Geological Society of America Memoir 104.

Dow, F. 1976. *Manhattan Beach Yesterdays: Personal Recollections*. Manhattan Beach Historical Series Publication No. 4.

Hickman, J.C. 1993 (1996 printing with corrections). *The Jepson Manual: Higher Plants of California*. Berkeley, University of California Press.

Keeley, J.E. 1989. The California Valley Grassland. Pp. 2–23 in *Endangered Plant Communities of Southern California*. A.A. Schoenherr, Editor. Proceedings of the 15th Annual Symposium, Southern California Botanists, Special Publication No. 3.

Nelson, J.W. 1919. *Soil Survey of the Los Angeles Area, California*. U.S. Department of Agriculture, Bureau of Soils. Washington: Government Printing Office.

Rosenberg, R. 1938. *The History of Inglewood*. Inglewood: Arthur Cawston.

Zedler, P.H. 1987. The Ecology of Southern California Vernal Pools: A Community Profile. *U.S. Fish and Wildlife Service Biological Report* 85(7.11).

Acknowledgements

A manuscript version of this poster was reviewed by Tim Ross (Rancho Santa Ana Herbarium), whose suggestions improved it immeasurably. The impetus to investigate the coastal priarie was given by a plant list assembled by Andrew Sanders (UCR Herbarium). Barry Prigge, Allan Schoenherr, Chris Nagano, Fred Roberts, Gary Wallace and Dorothy Lyndes have given encouragement and helpful suggestions. The UCLA Herbarium and Rancho Santa Ana Herbarium gave gracious access to collections and primary materials. Research reported here was supported by a National Science Foundation Graduate Fellowship. All errors are the responsibility of the authors.

The poster was created using IRIS Showcase 3.3 on a Silicon Graphics Indigo 2 workstation and printed on an HP 750c DesignJet plotter. Chase Langford and William Zhang gave technical assistance.