

Flora of the Peninsula

An efield Guide to the Vascular Native Plants of the
Palos Verdes Peninsula



By: Neil Uelman

Dedication

This efield guide is dedicated to the native plants of the Palos Verdes Peninsula; thank you for letting me tell your story and teaching me your secrets. This efield guide is also dedicated to all the people that have strived to protect, preserve, and educate about the native plants and open spaces of the Palos Verdes Peninsula.



Preface

Rolling hills, breathtaking vistas, rugged and windswept bluffs, carved canyons, cloud-filled skies—set to the background of a vast blue ocean or bathed in a deep marine layer—the Palos Verdes Peninsula possesses all of these and more. The native plants of the Palos Verdes Peninsula bring all these scenes alive with color, texture, smells, and excitement. This is an efield guide to the native vascular flora of the Palos Verdes Peninsula. It encompasses 12 years of fieldwork and shows all vascular native plants that I have encountered in and out of nature reserves on the Palos Verdes Peninsula. This efield guide is designed to help you identify the native plants you encounter on the Palos Verdes Peninsula. In this efield guide, 242 species are represented. Each species page is accompanied by full color photographs showing everything from overalls of the plants to microscope photos of plant parts. In addition, common names, scientific names, flowering times, and plant descriptions accompany each page. Get outside and start enjoying all the wonders and excitement that the native vascular plants of the Palos Verdes Peninsula have to offer. Cheers!



Palos Verdes Peninsula (PVP)



The Palos Verdes Peninsula (PVP) is situated on the southwestern edge of Los Angeles County and extends into the Pacific Ocean from the mainland. The PVP is known for its cool, moist maritime climate, steep coastal bluffs, terraced hillsides, island history, and remnant patches of native plant communities such as coastal sage scrub, willow riparian, back dune, coastal bluff scrub, grassland, and chaparral. These remnant patches dot the landscape and represent some of the last remaining stands of these plant communities between Orange County and the Santa Monica Mountains.

It is characterized by steep coastal bluffs up to 60 m tall, terraced hillsides, and numerous drainages, including Miraleste Canyon, Que Viento Canyon, Altamira Canyon, Agua Amarga Canyon, Malaga Canyon, and George F Canyon, among others. The PVP is 15 km long and 8 km wide and includes both the Palos Verdes Hills and the San Pedro Hill. These hills have a mixture of suburban communities and open space. Access to most open spaces is via over 1,700 acres managed by the Palos Verdes Peninsula Land Conservancy. Elevation of the PVP ranges from sea level to 451 m at the top of San Pedro Hill. The PVP has a Mediterranean climate and typically receives its rainfall from late fall through late spring (November to April). The average rainfall on the PVP is up to 16 inches (Gale 1988). The temperature on the PVP typically varies from 51°F to 76°F and is rarely below 46°F or above 84°F (Gale

1988). Frost events on the PVP are rare. The PVP has a strong maritime influence, and dense sea fog is common year-round. The dense sea fog is especially prevalent during late spring and early summer (May through July), and these months often see cloudiness persist for weeks. The PVP has an intriguing geological history that is relevant to the biogeography of its extant flora and fauna. Tectonic movements that eventually gave rise to the peninsula began in the Pliocene (5.3 mya to 2.6 mya) and resulted in the submarine formation of a doubly plunging anticline along the south side of the northwest-trending Palos Verdes fault (Woodring et al. 1946, Dibble 2000). This anticline emerged first as an island during the early Pleistocene (ca. 2.8 mya), becoming part of the mainland Los Angeles Basin only by the end of the Pleistocene, around 11,700 ya (Woodring et al. 1946, Dibble 2000). The oldest rocks found on the PVP are from the Jurassic Period (150 mya). These rocks, known as Catalina Schist, form the lowest layer of the PVP. Lying atop the Catalina Schist is a diverse mixture of sands, silts, gravels, and clay, which provides numerous substrate types for the vegetation communities of the PVP. Coastal sage scrub (CSS), which is one of the major plant communities found on the PVP, primarily consists of *Artemisia californica*, *Salvia leucophylla*, *Encelia californica*, *Eriogonum cinereum*, *Eriogonum fasciculatum*, *Opuntia oricola*, *Opuntia littoralis*, *Malosma laurina*, *Stipa lepida*, *Melica imperfecta*, *Elymus condensatus*, and *Rhus integrifolia*. An interesting component of the PVP CSS is that it is dominated by *Rhus integrifolia*. Another major plant community found on the PVP is riparian woodland. The PVP's riparian woodland can be found in most canyons where there is seasonal or perennial water flow. The riparian woodland primarily consists of *Salix lasiolepis*, *Salix laevigata*, *Artemisia douglasiana*, *Baccharis salicifolia* subsp. *salicifolia*, *Urtica dioica* subsp. *holosericea*, *Toxicodendron diversilobum*, *Rhus integrifolia*, *Rubus ursinus*, and *Sambucus mexicana*. The last major plant community on the PVP is coastal bluff scrub. The PVP's coastal bluff scrub primarily consists of *Atriplex lentiformis*, *Encelia californica*, *Opuntia littoralis*, *Opuntia oricola*, *Cylindropuntia prolifera*, *Suaeda taxifolia*, *Lycium californicum*, *Isocoma menziesii* var. *sedoides*, *Extriplex californica*, *Eriogonum parvifolium*, *Rhus integrifolia*, and *Cleomella arborea* var. *arborea*.

The unique biogeographical relationships of the PVP to the Channel Islands and coastal southern California present numerous interesting questions and conservation concerns regarding its vascular flora.



Palos Verdes Peninsula



**Santa Monica
Bay facing
side**



**Los Angeles
Basin facing
side**



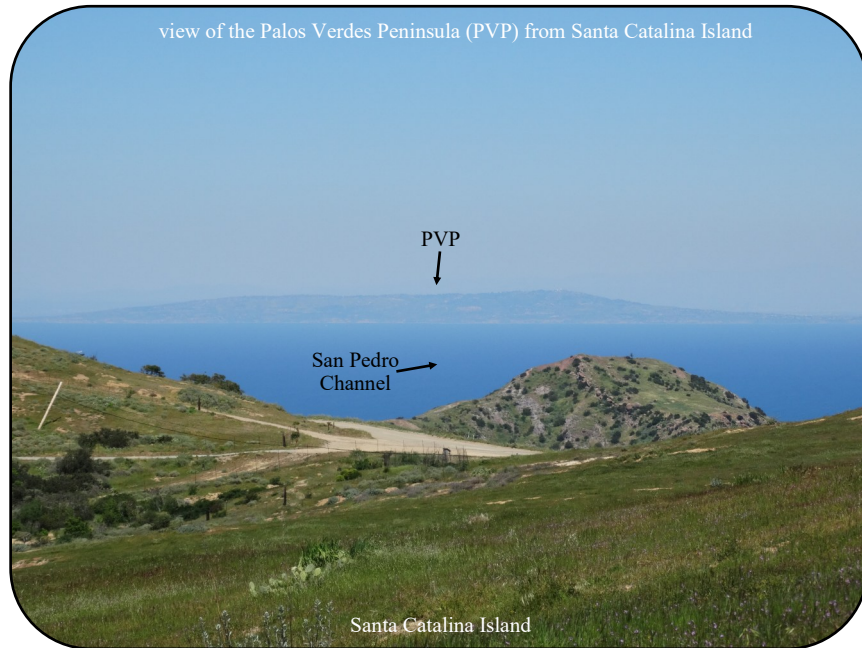
**San Pedro Channel
facing side**



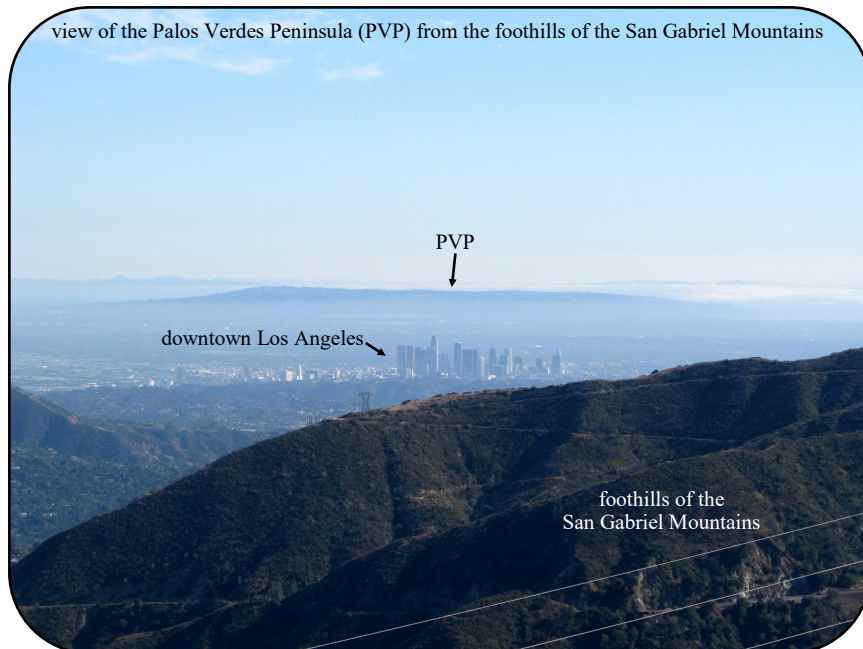
**Port of Los
Angeles facing
side**

Palos Verdes Peninsula

view of the Palos Verdes Peninsula (PVP) from Santa Catalina Island



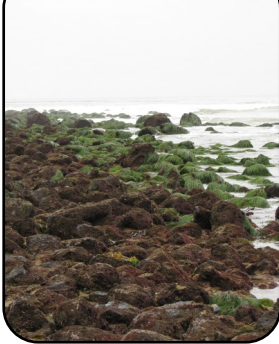
view of the Palos Verdes Peninsula (PVP) from the foothills of the San Gabriel Mountains



Palos Verdes Peninsula Plant Communities

The native plant communities found on the PVP are coastal sage scrub, coastal bluff scrub, coastal chaparral, back dune, grassland, riparian woodland, and marine rocky intertidal.

marine rocky intertidal



riparian



back dune



coastal bluff scrub



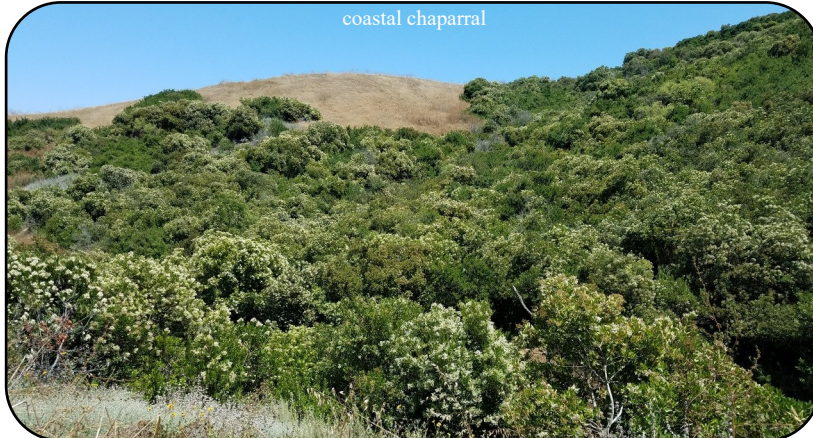
coastal sage scrub



grassland



coastal chaparral



Palos Verdes Peninsula Plant Communities

Since the PVP is situated on the coast of the South Bay area in southern California, temperatures on the PVP are fairly pleasant year around, and in addition, it can often become bathed in a marine layer throughout the year. This coastal marine layer provides the plants of the PVP with much needed supplemental moisture (outside of average rainfall) throughout the year, especially during the summer months.



PVP Plant Communities

Marine Rocky Intertidal Surfgrass

The marine rocky intertidal surfgrass community is found throughout the coast of the PVP. It is in the area between marine and terrestrial habitat in turbulent waters at or below the low tide line. The organisms of this zone are well adapted to exposure for extended periods during fluctuating tides and wave action. The aquatic flowering plant that dominates this turbulent rocky area along the PVP waters is *Phyllospadix torreyi*, or commonly known as surfgrass (and yes, this plant produces underwater flowers!). This species also provides a whole suite of ecosystem services, as well as providing refuge for many marine organisms.



Phyllospadix torreyi exposed at low tide

exposed



Phyllospadix torreyi
(staminate inflorescence)

submerged



Phyllospadix torreyi
(pistillate inflorescence)



Phyllospadix torreyi submerged

PVP Plant Communities

Coastal Bluff Scrub

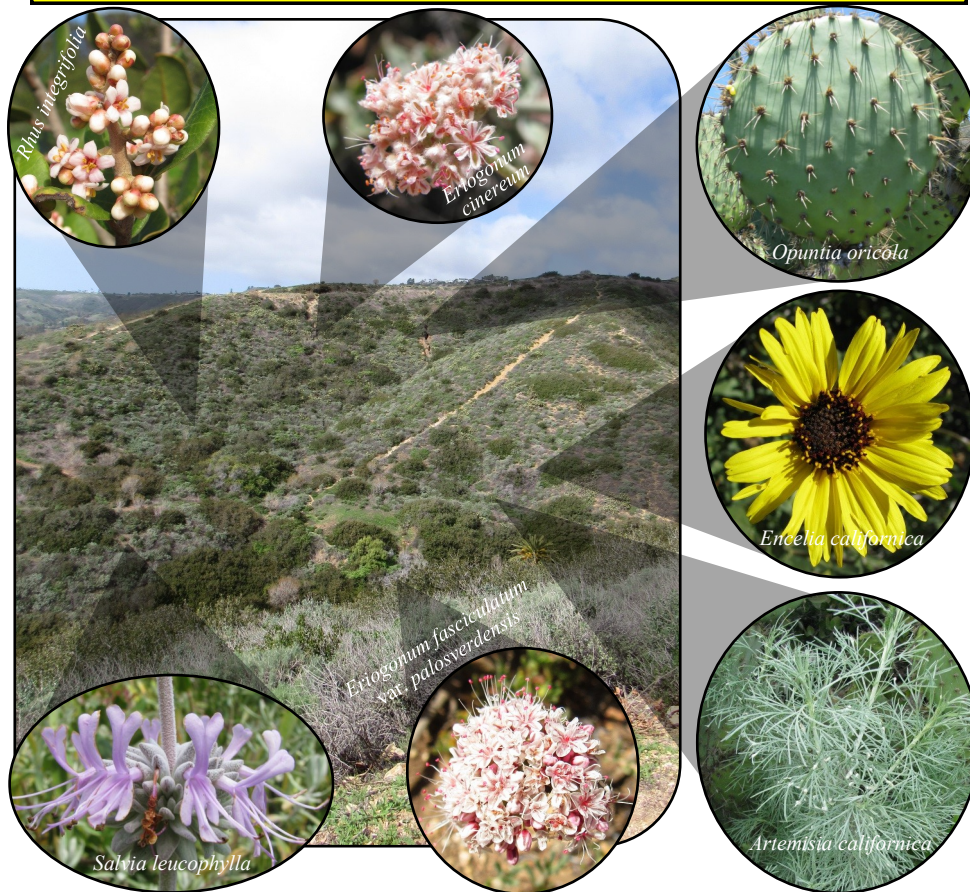
Coastal bluff scrub is found throughout the steep coastal bluffs of the PVP. This plant community is constantly exposed to high salinity, fierce winds, extreme exposure, and erosion. The plants of this community are shrubs, subshrubs, herbs, and succulents. The dominant plants of this community on the PVP are *Atriplex lentiformis*, *Dudleya lanceolata*, *Dudleya virens* subsp. *insularis*, *Encelia californica*, *Rhus integrifolia*, *Cylindropuntia prolifera*, *Opuntia oricola*, *Opuntia littoralis*, *Isocoma menziesii* var. *vernonioides*, *Isocoma menziesii* var. *sedoides*, *Extriplex californica*, *Eriogonum parvifolium*, *Mirabilis laevis* var. *crassifolia*, *Suaeda taxifolia*, *Lycium californicum*, *Peritoma arborea* var. *arborea*, *Aphanisma blitoides*, *Phacelia hubbyi*, and *Lupinus succulentus*.



PVP Plant Communities

Coastal Sage Scrub

Coastal sage scrub is the most commonly encountered plant community on the PVP. It is found throughout the PVP, most extensively on south-facing slopes. Soft shrubs and subshrubs often comprise this plant community. The native plants in this community usually have soft foliage and many species are aromatic. Many of the plants of this community go dormant during drier times (summer to fall). As ground moisture becomes scarcer, plants drop leaves (drought deciduous) or reduce leaf size to conserve water. Other plants will completely die back to the ground and hang out in underground storage organs until moisture is available, while some other types of plants store water in stems or leaves (e.g., *Dudleya*, *Opuntia*) and can be active year around. The dominant plants that make up coastal sage scrub of the PVP are *Artemisia californica*, *Salvia leucophylla*, *Salvia mellifera*, *Encelia californica*, *Eriogonum cinereum*, *Eriogonum fasciculatum* var. *palosverdensis* (unpublished name), *Opuntia oricola*, *Opuntia littoralis*, *Rhus integrifolia*, *Malosma laurina*, *Stipa lepida*, *Melica imperfecta*, *Elymus condensatus*, and *Galium angustifolium* subsp. *angustifolium*.



PVP Plant Communities

Riparian Woodland

Riparian woodland is found along stream channels throughout the PVP. Most of these stream channels are found along canyons and have seasonal or perennial water flow. Since water is available in the ground for most of the year, the stream channels become dominated by large woody tree species. Other native plant species found in this community take advantage of the shade and cooler temperatures. The dominant plants in the riparian woodlands of the PVP are *Salix lasiolepis*, *Salix leavigata*, *Artemisia douglasiana*, *Baccharis salicifolia* subsp. *salicifolia*, *Urtica dioica* subsp. *holosericea*, *Toxicodendron diversilobum*, *Sambucus mexicana* and *Rubus ursinus*.



PVP Plant Communities

Riparian Woodland



PVP Plant Communities

Coastal Chaparral

Coastal chaparral is usually found along north-facing slopes on the Santa Monica Bay and Los Angeles Basin facing sides of the PVP. Due to the extensive development on these sides of the PVP, its occurrence nowadays is patchy and restricted primarily to canyons. The plants that make up this community are more arboreal (developing a single main trunk and producing a canopy) than shrubby and tend to be evergreen and hard-leaved. These plants also have extensive taproots that reach deep into the deep groundwater, allowing them to stay green all year. The dominant plants that comprise this community on the PVP are *Rhus integrifolia*, *Heteromeles arbutifolia*, and *Prunus ilicifolia* subsp. *lyonii*. The PVP chaparral community appears similar to chaparral seen on nearby Santa Catalina Island.



PVP Plant Communities

Back Dune

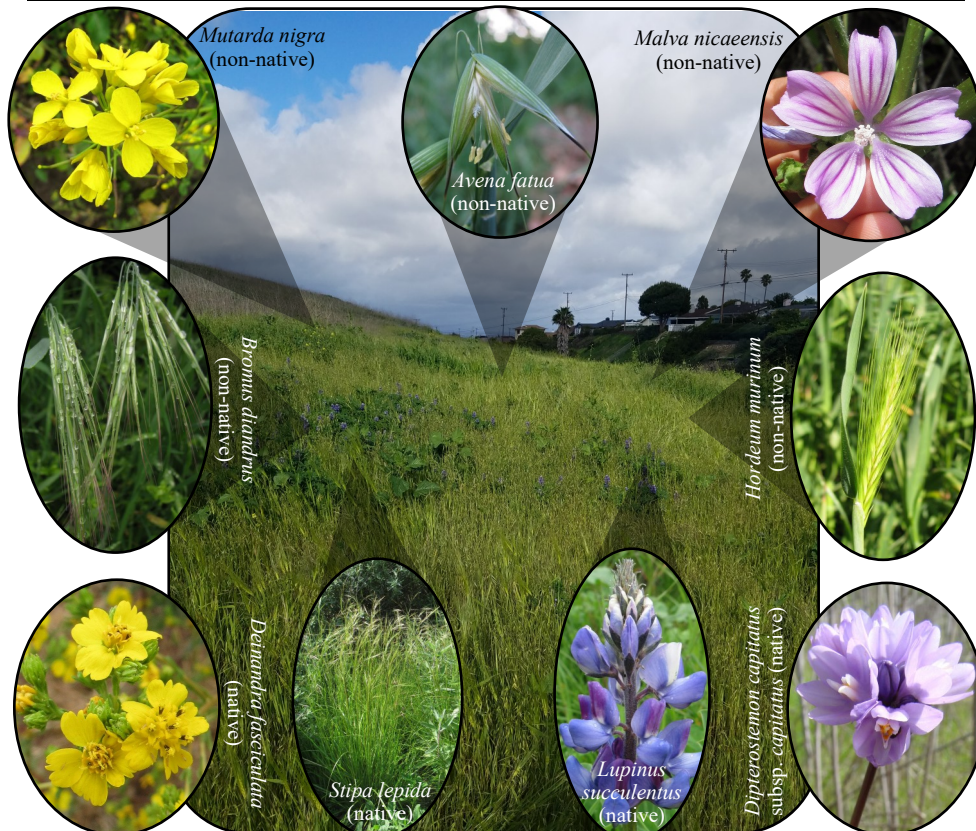
A back dune plant community is found at Malaga Dunes on the PVP. The Malaga Dunes area is a back dune that was once part of an extensive dune system that covered the coastal area of the present day South Bay area. This back dune is situated furthest back from the historical frontal dunes and is unique and special. The soil is a sandy clay combination. The dominant native plants in this back dune community are *Clarkia purpurea* subsp. *quadrivulnera*, *Croton californicus*, *Acmispon glaber* var. *glaber*, *Lupinus truncatus*, *Camissoniopsis lewsii*, *Camissoniopsis bistorta*, *Ericameria ericoides*, *Phacelia ramosissima*, *Rumex hymenosepalus*, *Artemisia dracunculus*, and *Pseudognaphalium stramineum*.



PVP Plant Communities

Grassland

Historically, native grasslands on the PVP were probably small patches found in the spaces between coastal sage scrub in sites with shallow or slightly compacted soils (see pg. 18). These native grasslands were probably dominated by *Stipa lepida*, *Stipa cernua*, *Stipa pulchra*, *Bromus sitchensis* var. *carinatus*, *Sisyrinchium bellum*, *Calochortus catalinae*, *Deinandra fasciculata*, *Amsinckia intermedia*, *Lupinus succulentus*, and native corms such as *Dipterostemon capitatus* subsp. *capitatus*, *Brodiaea terrestris* subsp. *kernensis*, and *Bloomeria crocea* var. *aurea*. Today, large expanses of grasslands are found throughout the PVP. However, these present day grasslands are dominated by non-native species (*Avena fatua*, *Avena barbata*, *Bromus catharticus*, *Bromus diandrus*, *Bromus madritensis*, *Mutarda nigra*, *Hordeum vulgare*, *Malva nicaeensis*, *Malva parviflora*, and *Centaurea melitensis*) and are a result of historical disturbances such as extensive grazing, agriculture (dry farming), and development on the PVP. Some native plant species can still be found in these non-native dominated grasslands (*Stipa lepida*, *Stipa cernua*, *Stipa pulchra*, *Bromus sitchensis* var. *carinatus*, *Dipterostemon capitatus* subsp. *capitatus*, *Deinandra fasciculata*, *Lupinus succulentus*, and *Sisyrinchium bellum*) but, are very sparse.

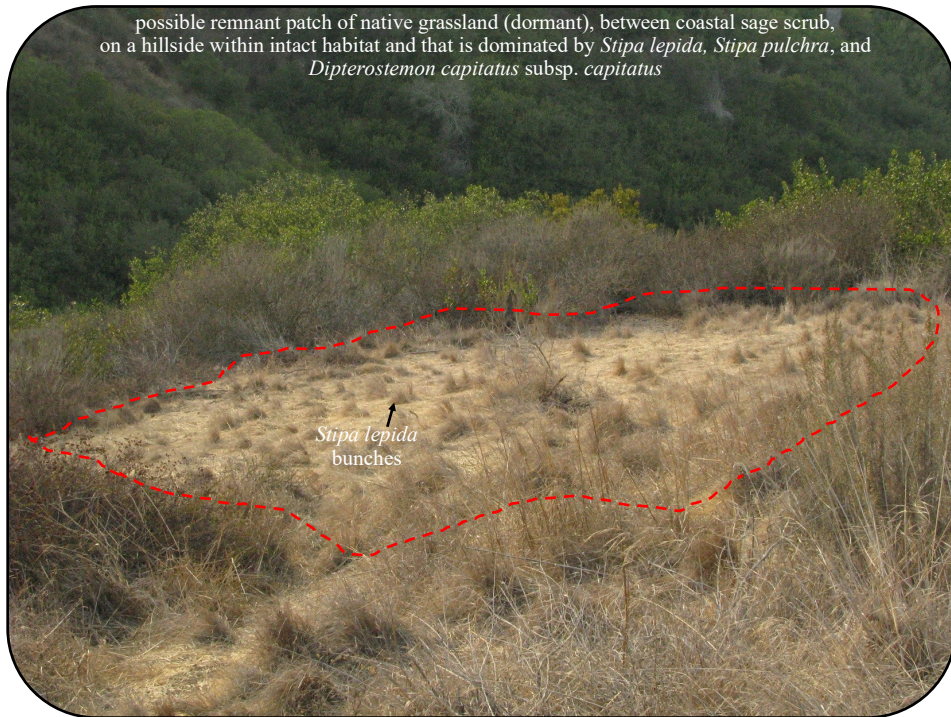


present day grassland dominated by non-natives

PVP Plant Communities

Grassland

possible remnant patch of native grassland (dormant), between coastal sage scrub, on a hillside within intact habitat and that is dominated by *Stipa lepida*, *Stipa pulchra*, and *Dipterostemon capitatus* subsp. *capitatus*



possible remnant patch of native grassland (dormant) now mostly dominated by non-natives

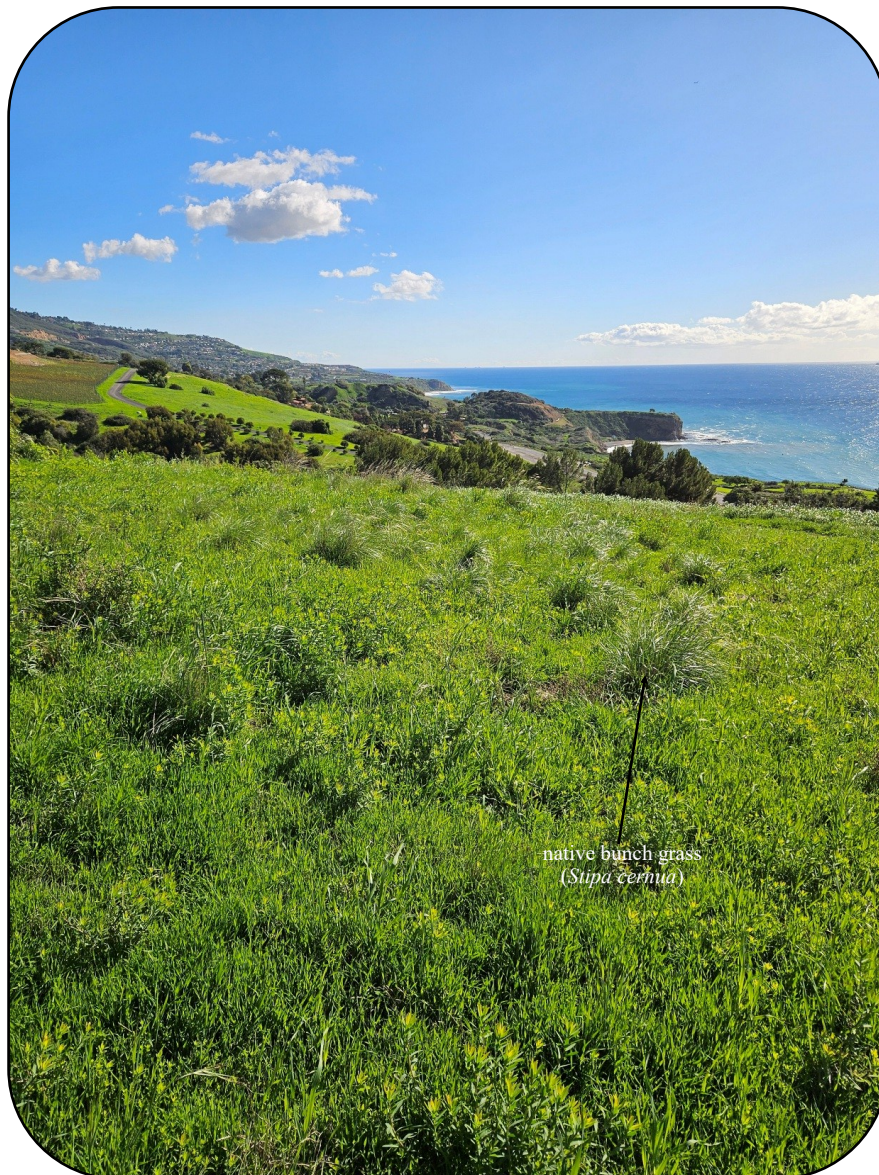
Stipa cernua & *Stipa pulchra*
bunches



PVP Plant Communities

Grassland

present day grassland (not dormant) on the PVP with only a few native plants present (primarily bunch grasses) and mostly dominated by non-native grasses



Palos Verdes Peninsula Fire

Many of the native plants on the PVP are fire adapted. Perennial shrubs such as *Rhus integrifolia*, *Artemisia californica*, *Heteromeles arbutifolia*, *Malosma laurina*, and *Isocoma menziesii* var. *vernonioides* have been found resprouting after fires. Native annual species and corms/bulbs have also come up in great abundance following fires, like *Emmenanthe penduliflora* (see pg. 21) and *Calochortus catalinae*. Historically, fire probably opened up plant communities on the PVP and helped to maintain a good balance of native plants. Nowadays, fires on the PVP convert the burned areas into non-native grasslands or monocrops of *Mutarda nigra*.

Portuguese Bend Reserve fire



Rhus integrifolia
base sprouting



Three Sisters Reserve fire



Heteromeles arbutifolia
base sprouting



Palos Verdes Peninsula Fire

Isocoma menziesii var. *vernonioides*
base sprouting after a fire



Palos Verdes Peninsula Fire

Emmenanthe penduliflora following the
2009 Portuguese Bend Reserve Fire



Palos Verdes Peninsula Historical Plants & Herbaria

Herbaria records have helped to shed light on which native plants were historically found on the PVP. Currently, a few species appear to be extirpated from the PVP, as they are only seen in herbaria records and no longer found in the wild on the PVP. For example, plants such as *Cirsium occidentale* and *Ranunculus californicus* appear to be extirpated.



PVP - *Cirsium occidentale* from 1931

PVP - *Ranunculus californicus* from 1931



Literature Cited:

- Dibblee TW. 2000. Geologic History Outline of the Palos Verdes Hills, California. In A.R Brown and K.W. Ehlert eds.). A day in the field with Tom Dibblee in the Palos Verdes Hills, California. Santa Barbara (CA). Thomas Wilson Dibblee, Jr. Geological Foundation.
- Gale D. M. 1988. Handbook of Wildflowers, weeds, wildlife, and weather of the Palos Verdes Peninsula. Third Edition. San Pedro (CA): Caligraphics Printing & Publishing. 214 P.
- Woodring, W.P., M.N. Bramlette, and W.S.W. Kew. 1946. Geology and paleontology of Palos Verdes Hills, California [Internet]. Washington D.C.: United States Department of the Interior; [cited 2016 May 10] <<http://pubs.usgs.gov/pp/0207/report.pdf>>

