native flora of estero bay

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Introduction

The botanical history of the Morro Bay area can be traced through the ice ages as our coastline receded and advanced over thousands of years. As plate tectonics moved landmasses to their current positions, so evolution moved the forms of life from early uni-cellular organisms to the dinosaurs to our current flora and fauna. As landmasses continue to move continents and ice ages continue their cycle of advance and retreat, so too does evolution continue to change our local plants.

Locally, the history of geologic change is most notable in our prominent volcanic plugs known as "the Morros." Changes in landforms are also evident in the Baywood fine sands that form the soils of the Los Osos area. Baywood fine sands are highly organic sands blown from ancient dunes. Evolution is evident in the diversity of floral species, as well as the occurrence of unique populations on their way to speciation, sub-speciation, or extinction.

Of all the things to be appreciated about the Estero Bay, and probably the most important, is in spite of increasing human encroachment this region of San Luis Obispo County still resembles its natural state relatively well. For this reason, this area has a high number of rare and under-reported species, some of which are found here and nowhere else in the world. This makes the conservation of as much open space as possible much more important to preserve this genetic information from being lost forever. The purpose of this field guide is to provide means to excite and captivate even the staunchest anti-environmentalist to the truly extraordinarily diverse and beautiful plants found nestled in our tiny corner of California.

The flora of the Estero Bay area (and San Luis Obispo County for that matter) is unique not only because it is well preserved but also because of its geographic location. Coastal California is broken up into two ecoregions, the cool, moist northern coastal scrub and the drought tolerant southern coastal scrub. The joining of these two communities occurs in San Luis Obispo County, thereby creating means for distinct and endemic plant forms. The Estero Bay itself exacerbates this effect with its sandy soils being surrounded by the deeper, heavier soils of the Coast Range Mountains. Thus, we have an island in terms of soil and species composition.

Like most islands, the threat of invasive species and human disturbance can amplify the loss of these remarkable species. Eucalyptus groves (*Eucalyptus spp.*), for example, have spread and destroyed an estimated 17% of the habitat of the federally endangered Morro manzanita (*Arctostaphylos morroensis*) as well as the once uniquely vegetated Hazard Canyon in Montana de Oro State Park. Likewise, Veldt grass (*Ehrharta calycina*), introduced from South Africa, has decimated available habitat for numerous rare species, including the dune almond (*Prunus fasciculata* var. *punctata*), curly leaved monardella (*Monardella*

undulata) and the California spineflower (*Mucronea californica*), all of which are on the CNPS watch list. These facts alone have made it necessary to inventory the species found in our preserved open spaces.

As we lose our natural heritage to human "progress," we also lose our connection to natural world. The Bureau of Land management estimates that 342 acres of land per hour and 8,219 acres per day are lost to exotic species. In the face of such dire threats, there are always those who try to record what's left of our unique native flora before more disappears.

Locally, a few persons have tried to document our flora. Since the 1830's numerous botanists have spent varying efforts collecting plants in San Luis Obispo County. However, not until 1970 did Dr. Robert F. Hoover of California Polytechnic State University, San Luis Obispo write the definitive flora of our area, The Vascular Plants of San Luis Obispo Count, California. While Hoover's flora is now often outdated on a taxonomic level, the work provides detailed information on plant distribution.

Recently, three books of flower photographs have been published. Central Coast Wildflowers: Monterey, San Luis Obispo and Santa Barbara Counties of California was published in 1993 and written by Mary Coffeen. This guide provides text, line drawings, and limited color photographs of many of our more common and more widespread plants of the central coast counties. Dune Mother Wildflower Guide: Dunes of Coastal San Luis Obispo and Santa Barbara Counties, California was published by the California Native Plant Society in 2001 and written by Dr. Malcolm McLeod. Dr. McCleod, recently deceased, was a major contributor to the protection and understanding of our county's flora. "Dune Mother" provides a more focused effort on dune plants, with numerous color photographs. Dr. Matt Ritter of CalPoly San Luis Obispo recently (2006) published Plants of San Luis Obispo: Their Lives and Stories.

This current guide, Native Flora of Estero Bay, attempts to focus on only those plants that occur in the immediate area. Plants found in this guide are found in the open spaces around the communities of Los Osos, Morro Bay, and Cayucos. Photographs are provided for all plants to aid in identification, and text is left to a minimum due to the existence of other reference materials. We are grateful for the mentoring of Dr. David Keil of California Polytechnic State University, San Luis Obispo.

About This Project

This guide is a first attempt at recording the flora of the Estero Bay area in a document that is easily referenced by the general public. This is a first edition of an ongoing effort. This guide does not cover all native plants of the study area, nor does it cover the approximately 123 exotic species. We are making this first edition available now to satisfy the need for a plant photo-guide for our area, even if it is incomplete. Our desire is to ultimately provide a second addition that will include the entire native flora as well as the exotic flora. The curious reader can refer to our lists of sedges, rushes, grasses, and non-covered native plants found at the end of this guide.

This guide was initiated by state park employees with the assistance of a grant from the Morro Bay National Estuary Program. However, the project grew beyond the scope of these agencies and became a hobby of the authors. We provide it here as an on-line publication for which we receive no royalties. The cost is the printing cost charged by the "print-on-demand" services of lulu.com. A free download of this guide can also be accessed at lulu.com.

Please contact us at michaelwalgren@yahoo.com if you have any comments, edits, or can provide us with a plant we have missed. For missed plants, please include location information and a photograph if possible. Appropriate credits will be given for any photographs we use.

About the Guide

This guide is arranged in order of the following groups: ferns and fern allies (pteridophytes), gymnosperms, and angiosperms (dicots and monocots). The taxonomy follows the Jepson Manual 1993. Changes in taxonomy are occurring and can be viewed online but are not yet printed in a new Jepson Manual. Therefore, in order to avoid confusing the reader, we chose to ignore taxonomic changes until a new Jepson Manual is published. A brief taxonomic and evolutionary overview of these groups is described below.

Present-day pteridophytes are generally considered relics of the first group of colonizing, terrestrial plants. These "living fossils" produce spores rather than seeds. Examples of pteridophytes include ferns, mosses, and horsetail (*Equisetum* spp.).

The gymnosperms evolved later (~300 mya) and all present-day species are derived from four taxonomic orders. However, it is now recognized that gymnosperms as a true taxonomic group may never have existed and that they may merely represent an early plant form adapted to past conditions. Typically, gymnosperms are plants that produce seeds but not in a fruit. Examples

include pines, junipers, cypress, spruce, fir, hemlock, redwood, giant sequoia, incense cedar, and ephedra.

The most recent and well-known group of plants is the angiosperms. These diverse plants are generally referred to as the "flowering plants," which produce flowers as well as seeds inside fruits (ovaries). The earliest known origin of the angiosperms is ~130 mya, at which time they remained relatively static in their phenotypic traits, most likely as secondary species found underneath the immense canopies of ancient gymnosperm forests. However, just before the Cretaceous-Tertiary boundary (~85mya) the angiosperms underwent a massive diversification resulting in the colonization of most of the world until present.

Consequently, two different groups of angiosperms emerged: dicots and monocots. Dicots are plants that have two cotyledons (the initial leaves of a sprout), whereas monocots have only one cotyledon. Monocots include grasses, sedges, rushes, irises, lilies, orchids, and other less well-known genera. The dicot angiosperms represent the bulk of this guide.

Within each of these major headings the guide is categorized further by family name in alphabetical order. The format was arranged to present photographs of the overall nature of the plant in its natural settings as well as a close-up of the significant features. Occasionally, we only chose one photo because more than one for some species would be superfluous. The scientific name is in bold italics on the left, while the common name is found in all capital letters below. If a plant has a particular conservation listing it is included, and for those that do not the heading is left out completely.

The general habitat refers to where it would be expected in our area and not in the context of the entire state of California. We used the following recommended references for California plant communities: California Vegetation (1995) by Drs. Holland and Keil of CalPoly San Luis Obispo, and An Island Called California (1971) by Bakker. Each species may also contains notes on identifying characters, secondary features, and local facts; the use of the Jepson Manual: Higher Plants of California (1993) and The Vascular Plants of San Luis Obispo County, California were employed for this section. Also included is the code for where in the various local state parks each species can be found. For more details on status listings, habitat types, and park codes see the sections to follow.

For the purpose of this field guide we attempted to photograph as many species as possible found from 2002 to 2005. The anomalous rains of 2005 led to a fruitful year for discovery of obscure annuals, of which we included as many as possible in the guide. We have included only those plants thought to have occurred here naturally, excluding exotic plants or naturalized native plants introduced by humans. Examples of California natives introduced here include Monterey Pine (*Pinus radiate*), Lemonade Berry (*Rhus integrifolia*), Coyote Gourd (*Cucurbita foetidissima*), etc.

We hope our guide will help in the identification of plants commonly found in and around Estero Bay. As a rule of thumb, the specimens photographed here represent an attempt at encompassing its true nature. To truly capture the essence of a plant in a photograph is nearly impossible. This is why we recommend being familiar with the 'Jepson Manual.' You will only become confident in your identifications through familiarity with the Jepson Manual: Higher Plants of California. With that in mind, have fun and enjoy!

A Note on Grasses, Rushes, and Sedges

The grasses, rushes, and sedges are reviewed here in a cursory manner, with only obvious species presented, due to the difficulty of photographing diagnostic features. Even among botanists, these groups of monocots are often considered difficult specialty groups to identify.

Native grasses once dominated the rolling hillsides surrounding the bay. Typically, native grasses are perennial bunch grasses, while non-native grass species are annuals. With the onset of livestock grazing, the native grasses were largely displaced by non-native annual species which were tolerant of the increased grazing pressure. Development and the introduction of other weedy species have now diminished the native grassland communities. Many native grasses seek refuge on serpentine outcrops, while others have persisted as isolated populations in the less grazed and disturbed areas. This guide presents species that are most commonly seen in the Estero Bay area.

There are many native rush and sedge species in our area. They have different water, light and salinity tolerance ranges and they typically occur in moist areas where the soil rarely dries and fresh water is readily available. There are many differences between the genera and always exceptions to the rules. That said, the following genera can often be distinguished based on unique features: *Carex*, *Scirpus*, *Juncus*, *Eleocharis*, and *Luzula*. A common saying that can *generally* be applied to help one differentiate between sedges, rushes, and grasses is the following: "Sedges have edges, rushes are round, and grasses have joints all the way to the ground."

This guide includes only photographic examples of the common genera of grasses, sedges, and rushes located in and near the Estero Bay area. There are many more species than actually represented here. For a complete list of species in our area see the tables at the end of this guide.

Status Listings

CNPS The California Native Plant Society (CNPS) is a non-profit organization dedicated to the preservation of native flora in California. The CNPS has been involved in assembling, evaluating, and distributing information on special-status plant species in the state, as listed in the Inventory of Rare and Endangered Vascular Plants of California (6th Ed. 2001), now available with quarterly updates on-line. A list 1A plant is considered to be extinct. A list 1B plant is considered rare, threatened, or endangered in California and elsewhere. A list 2 plant is considered rare, threatened, or endangered in California but is more common elsewhere. A list 3 plant is a species for which the CNPS lacks necessary information to determine whether or not it should be assigned to a higher list. A list 4 plant is a species of concern to be monitored but is considered at low risk.

SE/ST/SR These listings pertain to the state classification of Endangered, Threatened, or Rare in California. The California Department of Fish and Game (CDFG) has jurisdiction over threatened or endangered species that are formally listed under the California Endangered Species Act (CESA). The CESA is similar to the Federal Endangered Species Act (ESA), providing additional protection to listed species in California. The CESA is intended to conserve, protect, restore, and enhance listed species and their habitat. The CDFG also maintains informal lists of "Species of Special Concern." These species are broadly defined as plants and animals that are of concern to the CDFG because of population declines and restricted distribution, and/or because they are associated with habitats that are declining in California.

FT/FE This refers to the listing of Federally Threatened or Endangered species by the U.S. Fish and Wildlife Service (USFWS). An "endangered" plant or animal species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered within the foreseeable future. The USFWS also maintains a list of species proposed for listing as endangered or threatened which have been published in the Federal Register. Some species may be less formally recognized at the regional level as "Federal Species of Concern." Under the ESA, plants receive less protection than animals for reasons best described as cultural rather than logical.

Status listings in this book are formatted as follows: CNPS status/state status/federal status. An example is 1B/ST/FT, which means CNPS 1B/state threatened/federally threatened.

Communities

Intertidal

Marine intertidal communities are exposed to a variety of environmental extremes. The constant wave action, periodic exposure to the atmosphere, direct sunlight, and variable salinity on a diurnal as well as an annual basis. The algae and angiosperms in the intertidal zones are partitioned throughout this community based on their tolerance to the above factors. The two marine aquatic angiosperm genera found within the Estero Bay intertidal communities are *Phyllospadix* (surf-grass) and *Zostera* (eel-grass). Competition pressures in the intertidal zones are as prevalent as in terrestrial plant communities. Competition for space, light, and available substrate for attachment are major factors. Often every inch of the rock is covered by intricate patterns of red, brown and green algaes. There are epiphytic algae as well, which are able to make their homes on the thallus (vegetative "body") of other algae or on the shells of intertidal invertebrates.

The macrophytic (large, visible) algae and angiosperms must be well anchored to the rocky substrate to withstand the constant onslaught of the waves (especially during storms), high tides, and large swells. The *Phyllospadix* spp. are much more tolerant of high wave action than are *Zostera* spp., which are more common in calmer protected waters below the mean low tide.

Estuaries and Coastal Salt Marshes

One of the most unique habitats in our area is the Morro Bay estuary. Estuaries are protective bays where fresh and salt water converge; estuaries are found at the bottom of the watershed. Located within estuaries are eel-grass beds, open water, salt marsh, and mud-flat habitats.

This mix of estuary habitats creates a favored stopover for migrating birds as well as a permanent home for many other organisms. Over time, these communities in California have been lost due to human disturbances, and now they are limited and scattered along the coastline (the largest being San Francisco Bay).

Plants growing in and around the Morro Bay estuary are continually being inundated with saline conditions from tidal actions, while during periods of high rainfall, freshwater drains down into the bay from creeks and roads. For this reason, plants in this community must be salt tolerant as well as tolerant of submergence.

Most of the plants in these communities are low growing herbaceous species which are specially adapted to their environment. Many species have aerenchyma cells (which allow for air storage) and salt excretion cells. While these are highly productive communities that are extremely important for wildlife, there is relatively low plant diversity due to halophytic (saline), and often anaerobic (low oxygen), soils. Soils consist of thick mud mixed with organic matter creating waterlogged silt. In fact, many of the plants are entirely submerged on a diurnal basis.

There is a clear zonation of brackish water with varying degrees of salinity. Plant species are arranged along this gradient relative to their tolerance of the saline conditions. The photograph below is an example of zonation within a salt marsh: red colored pickleweed (*Salicornia subterminalis*) is seen in the distance, *Jaumea carnosa* and *Frankenia salina* in the middle ground, and *Juncus acutus* in the foreground. Out of sight in the distant background would be found eel-grass beds, mud-flats, and open water habitats.

Salt marshes are typically dominated by low growing halophytic perennial species such as *Salicornia virginica* and *Jaumea carnosa.* Other common local species include: *Distichlis spicata*, *Cotula coronopifolia*, *Atriplex californica*, *Frankenia salina,* and *Suaeda californica.*

Coastal salt marshes sometimes occur where there are no estuaries, such as at the mouths of coastal streams/creeks, and at edges of seasonal lagoons. These areas often have more rigid-bodied plant specie, such as *Juncus acutus*, located along the upper edges where there is more fresh water input and less water inundation.

Strand

While generally not vegetated by plants, the strand is an important community that provides habitat and food for many species. The strand is the area of beach between the high tide line and the first dunes (foredunes). Strand

is characterized by salt spray, heavy fog, high winds, blowing sand, and wrack-line consisting of accumulations of uprooted marine algae, driftwood and other debris. Scattered plants may be found at the interface between strand and foredunes, including *Suaeda californica*, *Atriplex watsonii*, and introduced *Cakile maritima*. Common wrack-line "seaweeds" (algae) on the strand include *Macrocystis* spp. (giant kelps), *Nerocystis* spp. (bull kelps), *Fucus* spp. (rock kelps), *Egregia* spp. (feather boas), and *Uva* spp. (sea lettuce). The mounds of washed-up seaweed provide food and habitat for many invertebrate species and food for vertebrates such as birds. Above the high tide line the sand begins to accumulate at the foredunes.

Sand Dune Communities

The Morro Dune Complex stretches from the north bluff above Spooner's Cove in Montana de Oro State Park (MDO) to the beach immediately south of Cayucos where Toro Creek meets Highway 1, and includes remnant dunes at Old Creek and Villa Creek. The dunes decreased in diversity moving south to north, presumably due to direct human impacts.

This terrestrial community type is probably the harshest environment found in the Estero Bay. The salt spray and constant wind make it difficult for a plant to establish a large stature, especially in the regions of the dunes nearest the water line, resulting in less productivity. Second, because sand granules have a low surface area they lack the ability to hold water, creating conditions comparable to the desert. Thirdly, the constant shifting nature of sand dunes hinders permanent establishment. Finally, salt and sand abrasion and increased solar radiation make this a harsh area. Moving further from the water line as well as the wind influence, sand dunes become more stabilized and the harsh

conditions lessen their intensity. For example, in the photograph above, more vegetation is seen in inland areas protected from the coastal conditions.

Coastal development has destroyed much of the sand dune communities, as has the introduction of exotic species such as *Carpobrotus* spp. (iceplant) and *Ammophila arenaria* (European beachgrass). Exotic plants have unnaturally stabilized dunes and usurped habitat from the native plants in the area. The sand dune community is composed of several discrete community types discussed below.

Habitats present in the Morro Dunes Complex include coastal dune scrub, dune fields, coastal dune wetlands, coastal dune swale, riparian, and *Ammophila arenaria* dominated dunes.

Fore/Pioneer Dunes

The fore or pioneer dunes are those dunes located nearest to the strand. These dunes are characterized by a high rate of sand movement which exceeds the rate of colonization by vegetation. This region of the sand dunes is subject to extremely harsh environmental factors which select for uniquely adapted assemblages of plants. Such conditions include desiccation from wind and salt spray, salt and sand abrasion, high reflectivity and surface temperatures, periods of constant fog, fluctuating tides, high salt content in the soils, low soil fertility low water holding capacity, and constant burial, excavation, and re-burial of root systems.

The plants that grow on the foredunes are often called dune stabilizers and are very tolerant of the above mentioned environmental pressures. Foredune plant species are often prostrate or creeping along the soil surface, have small succulent leaves with pubescence, are light in color, and have a small surface to volume ratio. They also typically have a large tap root, a complex shallow or surface root system, and generally root at the nodes.

Common native dune stabilizers include *Ambrosia chamissonis*, *Abronia latifolia*, *Abronia maritima*, *Abronia umbellata*, *Camissonia cheiranthifolia*, *Artiplex leucophylla*, and *Croton californicus*. Other native species include *Leymus mollis*, *Eriastrum densiflora*, *Erigeron blochmaniae*, *Dithyrea maritima*, *Malacothrix incana* and *Dudleya caespitosa.*

Common non-native dune stabilizers include: *Cakile maritima* (sea-rocket), *Carpobrotus chilensis* (sea-fig), *Carpobrotus edulis* (hottentot-fig), and *Ammophila arenaria* (European beach grass). The non-native species that invade the foredunes are of particular concern as they readily displace the few native species that are capable of living in this harsh environment.

Stabilized Dunes

Stabilized or back dunes occur inland of the pioneer dunes where there is enough vegetation present to reduce or stop the rate of air movement along the sand surface. Stabilized dunes are considered to be older dune communities and are classified by their increase in plant species diversity, stature, and composition. These species are, however, less tolerant of the harsh environmental variables that affect species in the pioneer dunes and are therefore restricted to the more sheltered regions of the dune ecosystem. There are many different plant communities that occur on stabilized dunes.

The introduced *A. arenaria* has formed monocultures and created stabilized steep dunes on over 33 acres at MSSB. In striking contrast to the general trend along the California coast, the Morro Bay sandspit dunes have not yet been invaded by *A. arenaria*. Rather, extensive stands of the native dune grass, *Leymus mollis*, stabilizes the dunes on the sandspit.

Dune Fields

Dune fields are large expanses of bare sand. These areas do not support vegetation, but are nonetheless a habitat type. In our area dune fields are present only along the inner portions of the Morro Bay sandspit.

Coastal Dune Scrub

The primary native plant community on the stabilized dunes is coastal dune scrub. Successionally older than the pioneer dunes, it is largely dominated by shrubby species although forbs are present. Coastal dune scrub has much

more stable and fertile soils than the pioneer dunes, with greater organic matter content and water holding capacity and a much lower salt content. Species composition in coastal dune scrub communities differs from other coastal scrub communities.

There are a few plants that share co-dominance throughout the coastal dune scrub although dominance of these species shifts from north to south along the dune system. The most common shrub species in this community include *Lupinus chamissonis*, *Baccharis pilularis*, *Artemisia californica*, *Eriogonum parvifolium*, *Ericameria ericoides*, *Hazardia squarrosa*, and *Eriophyllum staechadifolium*. Common sub-shrubs and forbs include *Lotus scoparius*, *Erigeron blochmaniae*, *Helianium scoparium, Heliotropium curassavicum*, *Lessingia filaginifolia*, *Croton californicus*, *Achillea millifolium,* and *Horkelia cuneata.*

Ancient Dunes

In the area south of Morro Bay estuary we find extensive deposits of ancient wind-swept dune sands known as Baywood fine sands. These soils consist of sands that existed as dunes during past millennia which have become mixed with a high content of organic material. These fertile brown sands support a variety of communities and many endemic, federally listed, and rare plant and animal species.

Baywood fine sands are a soil type and not a plant community. However, because they support such unique habitats, we discuss them here as ancient dunes. Within these ancient dunes we find the unique maritime chaparral of MDO, the pygmy oak forests at LOOR, and the open coastal dune scrub typical of Shark's Inlet in MDO and the Powell properties. Baywood fine sands occur throughout the Los Osos area, suggesting that most of the previous habitats associated with these soils have been extirpated. Therefore, the remaining remnants of Baywood fine sand associated communities are extremely rare.

The Baywood fine sands coastal dune scrub is especially at risk since very little remains, the soils are prone to erosion from human activities, and the open nature is susceptible to invasion by plants such as *Ehrharta calycina* (Veldt

grass). The remaining pristine Baywood fine sands associated open coastal dune scrub likely amounts to less than 50 acres. The other acreage has been developed or invaded by *E. calycina*.

In Los Osos, Baywood fine sands contain soils bound together by a dense growth of lichens and mosses that form a biological crust, or cryptogametic soil. This type of community is highly susceptible to disturbance by invading exotic plant species, foot traffic, and erosion. They can also form "seed beds" for mosses, ferns and fern allies, and angiosperms. Many lichens contain cyanobacteria as the photobiont (photosynthesizing component), which can play an important role in nitrogen fixation.

Coastal Sea Bluff Scrub

Coastal sea bluff scrub occurs in large stands, forming substantial, although discontinuous, pockets along the coastal terraces and steep bluff faces. The immediate proximity to the coast subjects these slopes to a variety of harsh environmental conditions. The increased salt spray and wind, as well as the eroding parent material are contributing factors to the species composition and average height of the shrub layer. Shrubs are dwarfed, about 0.5 meters, and are typically prostrate and mound like. The co-dominate composition is commonly *Artemesia californica, Hazzardia squarrosa,* and *Isocoma menzesii*. There is an increase of *Toxicodendron diversilobum* on the bluff tops, but the steep, eroded faces are typically dominated by *Eriophyllum stachaedifolium, Erioginum parvifolium*, and *H. squarrosa*. Dominate herbaceous species include *Erigeron glauca*, *Lessingia filaginifolia* , and *Atriplex californica*.

The coastal sea bluff scrub forms ecotones with grasslands, but the width of these ecotones is highly dependant on a variety of factors, including

general topography, substrate, depth of soil profile, degree of erosion, slope aspect, and elevation. In general, where erosion is prevalent, coastal sea bluff scrub is more common. The coastal terraces of the bluffs are largely dominated by mixed grasslands with coastal sea bluff scrub occurring along the fringes of the cliffs and at headlands. The more northern bluffs near Harmony begin to include more northerly species not found in the rest of our local parks.

Coastal Scrub

Coastal scrub, or "soft chaparral," is most commonly associated with moderately dry Mediterranean climates. This community occurs where moisture from the ocean is available. These areas typically have a shallow soil profile and water is most commonly available in the upper horizons during the winter and spring. Many coastal scrub plants are semi-woody, many branched and drought deciduous. This community supports a canopy ranging from 0.5-2.5 meters on average, with a variety of understory forbs.

Coastal scrub communities are adapted to fires; many coastal scrub species have volatile oils, can stump sprout, or have seeds that require fire scarification and enriched nutrient availability before germination can occur. In coastal scrub communities, both shrubby and herbaceous species are the most diverse and abundant in the years that immediately follow fires.

Coastal scrub can be recognized by *Artemisia californica*, *Salvia mellifera*, *Eriogonum parvifolium, Baccharis pilularis,* and *Mimulus aurantiacus*. Other common coastal scrub species include *Eriophyllum staechadifolium*, *Eriophyllum confertiflorum*, *Toxicodendron diversilobum,* and *Rubus ursinus*. Common understory species include *Pteridium aquilinum*, *Dudleya lanceolata*, *D. caespitosa*, *Potentilla glandulosa,* and *Sanicula crassicaulis.*

Coastal scrub communities typically dominate the slopes along the coast, as well as many of the back dune areas. Coastal scrub commonly intergrades with rocky outcrops, maritime chaparral, and both annual and perennial grasslands, in some cases forming very broad ecotones. The grassland ecotones are dominated by *Baccharis pilularis* which often shares dominance with *Artemisia californica* and *Eriogonium parvifolium*. In the Estero Bay area, the coastal scrub communities are among the highest in diversity of the terrestrial plant communities.

Chaparral

The group of plants in chaparral are often referred to as "hard chaparral" due to their woody, stiff nature as well as their dense, entwined, sometimes impenetrable, branching. This community is represented here by the more specific form referred to as maritime chaparral. Maritime chaparral occurs on old stabilized sand dunes slightly inland from the immediate coast and consists of highly endemic species. Chaparral communities are relegated to more exposed and drier sites than most other plant communities.

Maritime chaparral can also be considered a "true shrubland" with the dominant plants ranging from a few centimeters to 2-3 meters. Decomposition of the foliage releases waxes and resins that coat the soil and hinder water penetration. This soil coating results in water stress and impedance of seed germination. Therefore, this community type is often found devoid of understory components with exposed sandy soil or bedrock between individuals.

Common species found in our area include the highly endemic *Arctostaphylos morroensis*, *Arctostaphylos osoensis*, and *Arctostaphylos pechoensis*. The

range of Morro manzanita is suggestive that it once was widespread and modern existing individuals are remnants of a much larger population surrounding the southern Estero Bay area. Other common shrubs include *Ceanothus cuneatus*, *Ceanothus griseus*, *Prunus fasciculata*, *Berberis aquifolium* var. *dictyota*, and *Adenostoma fasciculatum*. *Prunus ilicifolia* also occurs here, but not as commonly as the species mentioned above, and is typically found along oak woodland-maritime chaparral ecotones. Subordinate species include *Eriophyllum confertiflorum, Helianthemum scoparium*, *Salvia mellifera*, *Mimulus aurantiacus, Marah fabaceus*, *Toxicodendron diversilobum* and *Lotus scoparius*. Locally, some sub-shrub or herbaceous species occur only on the fringes of the ecotone between the chaparral and oak woodland. These species include *Croton californica*, *Chenopodium californicum*, *Lessingia filaginifolia*, *Galium andrewsii andrewsii*, *Galium porrigens*, *Salvia spathacea*, *Horkelia cuneata*, *Sanicula* spp., *Amsinkia spectabilis* and *Paeonia californica.*

Often, the maritime chaparral communities in Estero Bay intermix with coast live oak woodlands, riparian corridors, and coastal scrub communities.

Rocky Outcrops

Rocky outcrops are found scattered in all the Estero Bay terrestrial plant communities. Locally, rocky outcrops are most noticeable along the string of volcanic plugs and ridgelines from Morro Rock to Cerro Cabrillo. Plant species in rocky outcrops are typically rooted in shallow soils, sometimes utilizing decomposing leaf litter and soil that has accumulated in the cracks and crevices of the bedrock.

Both the shrubby and herbaceous layers differ between rocky outcrops located in grasslands and those located in coastal scrub communities. In addition, species composition varies with substrate, proximity to water, and

slope aspect. However, the most common shrubs found associated with rocky outcrops include *Baccharis pilularis, Artemesia californica, Eriogonum parvifolium* and *Toxicodendron diversilobum*.

The grassland rocky outcrops have an herbaceous layer consisting primarily of grasses, various *Gnaphalium* spp., *Eschscholzia californica, Clarkia* spp., and various loosely associated wildflower species. Rocky outcrops in the coastal scrub communities are much more diverse; the herbaceous layer varies greatly but species of note include *Potentilla glandulosa*, *Pellea andromedifolia, Polypody californicum, Pellaea mucronata*, *Dudleya lanceolata, D. caespitosa, Pentagrama triangularis*, and *Epilobium canum*. Common to most outcrops are *Dudleya* spp. and ferns.

Lichens and club mosses tend to colonize the bedrock directly on rocky outcrops in all plant communities. Both lichens and mosses act as colonizers by forming dense mats that act as a seed bed for plant species.

Grasslands

According to Holland and Keil (1995), grasslands historically are thought to have covered 13% of the entire state of California. However, because the soil is rich in nutrients and typically occurs in mild climates, much has been lost to farming and cattle grazing. Many of the native bunchgrasses have been replaced by crops and non-native annual grasses of the Mediterranean. In our region, grasslands form a mosaic with chaparral, coastal scrub, and oak woodlands. These communities are relegated to their respective soil types. For example, coastal grasslands tend to occur on heavy clay soils.

Native grasslands in our area consist primarily of bunch-grasses with the intervening spaces between bunches teaming with wildflowers arising from bulbs. Non-native grasslands are composed of annual non-bunching species

and lack bulb plants. Because most of the pristine grasslands have been altered in some form, many of the wildflowers and secondary components have been listed as sensitive, including *Castilleja densiflora obispoensis*, *Calystegia subacaulis episcopalis*, *Dudleya blochmaniae blochmaniae*, *Sanicula maritima* and *Layia jonesii* .

Grasslands are defined by soil types, grass species, a general lack of large schrubs, and wildflowers from bulbs. Therefore, while *Leymus mollis* is widespread in large patches on the foredunes of the sandspit, these are not considered grasslands because the other components of grasslands are missing. Finally, because grasslands have been heavily impacted by exotic species, we must define our grasslands as native grasslands/coastal terrace prairies, non-native grasslands, and mixed grasslands.

Native Grasslands/Coastal Terrace Prairies

Native grasslands along the Estero Bay are typically characterized by the presence of *Nassella pulchra* (purple needle grass), several species of grasses of lower dominance, and associated forbs such as *Calystegia subacaulis epispocalis*, *Sisyrinchium bellum* and *Juncus patens*.

At the EB property the bluff edges where cattle were less likely to graze often contain patches of native grasslands. Remnant grasslands can also be found in random locations throughout several of the park units, surviving in a field of introduced grasslands. In addition, *Nasella pulchra* is sometimes seen (without the other grassland components) in disturbed soils such as road-cuts.

Remnant grasslands occupy the flat coastal terraces and the shallow slopes below the coastal scrub. These slopes comprise the most extensive native grasslands in the Estero Bay area. The most common native grass in our area is *Nassella pulcra.* However, a number of other species may form localized patches of dominance, including *Danthonia californica* hummocks near Harmony, *Distichlis spicata* (saltgrass) in ecotones between grasslands and wetland communities, *Leymus condensatus* within the lush coastal scrub ecotones in large patches or scattered among the scrub plants, *Leymus mollis* patches on the foredunes of the sandspit, or *Nassella lepida* (slender needle grass) found in the shade of scrub. A number of other native species are scattered throughout our area, including *Melica imperfecta* (Melic grass), *Vulpia microstachys* (fescue), and several others (see list at the end of this book).

Our coastal grasslands also contain many herbaceous wildflowers such as *Viola pedunculata*, *Calystegia subacaulis episcipolis*, *Rannunculus californica*, *Chlorogalum pomeridianum, Sysirinchum bellum, Dichlostemma capitatum*, *Lasthenia* spp., *Oxallis* spp., *Trifolium* spp., and *Castelleja* spp., *Sanicula crassicaulis*, *Eschscholzia californica*, *Calandrinia ciliata*, *Camissonia ovata* and *Gnaphalium californicum*.

Serpentine outcrops are considered refugees for many native grasses in California. The bedrock is high in Calcium, Magnesium and other heavy metals which many non-native grasses are not adapted to tolerate.

Mixed Grasslands

Much of the grasslands in the Estero Bay area are actually mixed grasslands and coastal prairies. The dominant cover is a combination of both native and non-native species. The most common native species, *N. pulchra,* typically forms a co-dominant association with non-native species such as *A. barbata, A. fatua, L. multiflorum*, and a variety of *Bromus* spp. While the native grasses are often spread throughout the mixed grassland hillsides in abundance, they usually form much thicker stands in the lower areas with gradual slopes. Common native species which intergrade between the native and non-native grasslands include *Agrostis* sp. (bentgrass), *Brachypodium distachyon* (false brome), *Bromus carinatus* (California brome), *Danthonia californica* (California oat grass) and *Elymus glaucus* (blue wild-rye).

Mixed grasslands have often lost the herbaceous species found in large healthy native grasslands. In addition, mixed grasslands may not truly be mixed, but rather, may exist as pockets or islands of native grasslands within a larger non-native grassland. This pattern of invasion by exotic species is, in large part, due to the historic grazing that occurred in our area for over a century.

Non-Native Grasslands

While this is a native plant guide, non-native grasslands are impotant to discuss as they have displaced native grasses in catastrophic proportions. In addition, while native plant species have been extirpated from these areas, non-native grasslands still provide the open habitat preferred by some species of snakes, birds, and other wildlife.

Non-native grasslands host a variety of annual grass species and dominance of particular genera varies from site to site. The most common non-native grassland species in our area are distributed throughout the area and include *Vulpia myros* (fescue), *Lolium multiflorum* (wild rye), *Avena barbata* (slender wild oats), *Avena fatua* (sild oats), *Bromus hordeacous* (soft chess brome) and *Bromus diandrus* (ripgut brome), *Lolium perenne* (perennial wild rye), and *Polypogon monspeliensis* (rabbit's foot grass). Locally common grasses typically associated with hillsides parallel to the swales are *Aria carophyllea* (hair grass), *Briza minor* (little quaking grass) and *B. maxima* (rattlesnake grass).

Oak Woodlands

This community type can vary depending on the dominant species of oak. In the Estero Bay area and most of the coastal edge of California, the oak woodlands are dominated by *Quercus agrifolia* (coast live oak) and are thus classified as the coast live oak woodlands. This community is typically composed of a dense canopy due to the increase in moisture along the coast. More inland, where the moisture becomes increasingly scarce, the canopy begins to develop in a more open fashion. The Los Osos Oaks Reserve in the town of Los Osos is a perfect example of the dense canopy form of this community. Human impacts to this community are wide ranging. For example, the number of oak trees has diminished substantially due to the introduction of Eucalyptus trees, cattle grazing, and increasing human developments. In the Los Osos area, remnant trees seen in scattered lots and yards represent a larger historic stand.

In addition, there is a scarcity of seedling recruitment in old growth oak woodlands. The profuse seed output of annual grasses, which has replaced most of the understory species of the oak woodland, has created a significant increase in forage for rodents. Consequently, this has increased the number of rodents and deer, causing increased predation of acorns, resulting in low seedling survival. This effect is exacerbated in rangelands because not only are the acorns being consumed, but any seedling that has begun to develop is quickly eaten by cattle. The future of the oak woodland may be in danger as the old trees continue to die off without recruitment of the young.

Oak size and form is quite variable along the coast. Most are intricately multi-trunked trees up to 7-10 meters in height. Trees forming the dense

canopy can have rather large flat leaves due to increased shade. Individuals found venturing away from the woodland into the grassland or chaparral have very small leathery and rolled leaves. In addition, these spreading individuals are quite small, appear shrub-like, and usually do not surpass 4 meters in height. Large aggregates of dense canopy create the coast live oak woodland. The existence of a dense canopy is suggestive of persistent moisture throughout most of the year. Inside the canopy, the temperature can decline by more than 10°F and light penetration is minimal. These conditions make the understory seem sparse in most areas, consisting of mostly herbaceous species and ferns, although some shade-tolerant shrubs persist.

The most common native herbaceous species in the understory include: *Claytonia perfoliata*, *Solanum douglasii*, *Stachys bullata*, *Salvia spathacea*, *Galium aparine*, *Marah fabaceus*, *Pteridium aquilinum*, *Pholistoma auritum* and *Geranium bicknellii*. Exotics such as *Stellaria media*, *Oxalis pes-caprae* and *Carduus pycnocephalus* have invaded the herbaceous zones and often make up a majority of the understory diversity. The three main shade-tolerant shrubs are *Rhamnus californica, Ribes menziesii,* and *Toxicodendron diversilobum*. Where the maritime chaparral and the oak woodland forms an ecotone, the following coastal scrub components are found on the edges growing low in the understory: *Baccharis pilularis*, *Adenostoma fasciculatum*, *Artemisia californica*, *Mimulus aurantiacus*, *Ericameria ericoides* and *Eriogonum parvifolium*. In many areas, though, the understory of the woodland is completely composed of *Toxicodendron diversilobum*. In addition, these trees serve as host for mistletoe and a multitude of lichen species.

Pygmy Oak Woodlands

Many *Q. agrifolia* stands along the edge of Estero Bay are dwarfed. Genetic studies have shown that these populations are no different than the trees of "normal" stature. The pygmys are likely small due to environmental factors such as constant wind, sandy soils and salt spray. In the photograph above, the canopy is 2 m tall, and the area seen in the photograph is approximately 1 m tall. In a pygmy oak forest, what appears to be an individual tree may in fact be a branch of a buried matrix of trunks emanating from a single "mother plant."

Wetlands




Wetlands are a unique habitat type that is afforded additional protection by governmental agencies not generally given to other sensitive habitats. Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water and support vegetation adapted to life in saturated soil. Locally, wetland genera include *Salix, Juncus, Scirpus, Eleocharis, Carex,* and *Typha.* Wetland habitats include riparian areas, creeks, swales, ponds and emergent wetlands.

Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the U.S. Army Corps of Engineers and the USFWS, which generally define

wetlands through consideration of three criteria: hydrology, soils, and vegetation.

In 1977, in recognition of the importance of wetlands, the USFWS began a systematic effort to classify and map remaining wetlands in the country, now known as the National Wetlands Inventory Program. Using the USGS topographic maps as a base, the wetlands mapping effort provides a generalized inventory of wetlands according to the Classification of Wetlands and Deepwater Habitats of the United States (USFWS, 1979). Mapping has been prepared through interpretation of aerial photographs, with only limited ground confirmation, which means that a more thorough ground and historical analysis may result in a revision to wetland boundaries in a specific location.

Open water wetlands such as ponds and streams provide important habitat but support few plant species. These habitats are not discussed in detail here, but may support rushes, sedges, and herbaceous plants along the edges, as well as underwater flowering aquatic plants (not covered here) and floating *Lemna* spp. and *Azolla* spp. Wetlands associated with dunes have already been discussed above, and include alkali swales, riparian areas, and dune swales.

Riparian

These communities are classified as areas that line creeks, streams, and rivers. The vegetation is rather dense and cools the flowing water dramatically. In addition, the vegetation helps slow water flow and stabilizes the banks to control erosion. Most riparian zones are easily recognized because of their dense nature and their occurrences along the meanders of most waterways. Human disturbances to this community, like most others, have been quite extensive. Damning of waterways has greatly reduced flow, making water availability low in areas of high water tables. In addition, mismanaged grazing practices have removed the dense vegetation, consequently increasing flow rate and causing destabilization of the creek banks, ultimately leading to an increase in the rate of erosion.

Riparian areas are wetlands with overhead vegetation occurs, often bordering creeks, rivers, and streams. Locally, riparian areas are defined by

dense stands of *Salix lasiolepsis*. Willow stands may occur as a broad expanse as seen in the Chorro Creek area along South Bay Boulevard, or as a narrow zone such as the one curving up the canyon of Islay Creek at MDO. Other riparian vegetation includes *Salix laevigata*, *Salix luteo*, *Acer negundo negundo*, *Clematis ligusticifolia*, *Populus balsimifera*, *Populus fremontii*, *Umbellaria californica*, *Sambucus mexicana*, *Cornus sericea*,and *Platanus racemosa*.

Common understory native components of riparian habitat consists of *Rubus ursinus*, *Artemisia douglasiana*, *Juncus patens*, *Juncus effusus*, *Lonicera involucrata*, *Stachys bullata*, *Pteridium aquilinum* and *Toxicodendron diversilobum*.

Riparian areas support a variety of animals using the cool wet areas as a refuge surrounded by dry areas. Many species use the riparian areas, including migrating birds, reptiles and amphibians, mammals seeking watering holes, many fresh water invertebrates, and fish.

Emergent Wetlands

Emergent wetlands are areas where standing water is present for only a short time each year. Vegetation emerges from the high water table in association with anaerobic soils. Extensive emergent wetlands can be viewed at the HC property or where small springs seep water.

Fresh water emergent wetlands occur in various non-tidal areas in central California. They commonly consist of low-growing rooted and emergent perennial monocots. Soils are saturated and anaerobic for at least half the year when flooding occurs. Emergent wetlands occur in low lying swales near water drainages where the soil surface is at or near the water table. The most hydrophytic (water-tolerant) species dominate the main body of the wetlands during the wet seasons while the species that are less tolerant of constant

anaerobic conditions dominate the outer fringes and drainages up-slope. Changes in vegetation follow the basin contours and reflect depth and duration of flooding as well as proximity to water sources.

Numerous herbaceous plants, particularly rushes are sedges, combine to form a lush carpet of green vegetation. Common emergent wetland species in our area include *Stachys albens, Stachys pycantha, Juncus balticus, J. effinus* and various *Scirpus* and *Carex* species.

The main threat to the remaining emergent wetlands is invasion by exotic plant species and water diversions. The main exotic plant threat to our local emergent wetlands is *Carrduus pycnocephalus* (Italian thistle). Other exotic plants occur in these wetlands as lesser threats, including *Conium maculatum*, *Cirsium vulgare, Xanthium spinosum, Rumex crispus, Rumex acetocella, Cotula cornipofolia* and the grass *Festuca arundinacea* (tall fescue). These weeds penetrate wetland areas and threaten to outcompete native rushes, sedges, and other vegetation along the upper edges of wetlands.

Coastal Dune Wetlands

Coastal dune wetlands occur in low areas and depressions among the back dunes where the soil surface is near the water table. These depressions are created by wind erosion of the dunes and filling in of old stream channels that meandered through the dune system. While many of the species in these areas have high moisture requirements and roots that reach the water table, the coastal dune wetlands are at the dry end of the wetland community spectrum. Fresh water coastal dune swales, alkaline coastal dune swales and isolated pockets of riparian zones are all types of local dune wetlands. Riparian communities will be discussed later, as they occur in association with communities other than dunes.

Fresh Water Coastal Dune Swale

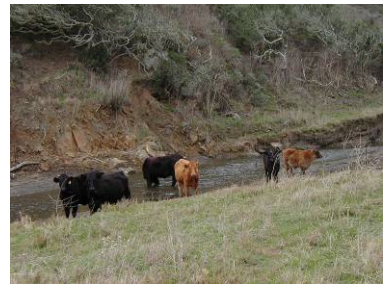
Coastal dune swales occur in long continuous expanses that run north to south between stabilized dune chains. They are typically dominated by fresh water species such as *Juncus acutus*, *Juncus phaeocephalus*, *J. patens*, *Scirpus americanus*, *S. pungens*, *Carex obnupta*, *C. praegracilis*, *Potentilla anserina*, *Baccharis douglasii*, and various other species of *Scirpus, Carex,* and *Juncus*. While the dune wetlands in our area are ephemeral, others may persist year-round. Examples of dune swale wetlands are best observed at MSSB in the winter behind the tallest dunes.

Alkaline Coastal Dune Wetland

Alkaline coastal dune wetlands occur in the dune areas as discontinuous pockets. They have a much higher soil salt content than other dune wetlands and are characterized by species such as *Salicornia virginica*, *Jaumea carnosa*, *Frankenia salina*, *Atriplex leucophylla*, and *Atriplex triangularis*. While they are a minor component of the dune system, they often occur on the coastal fringes of the large fresh water swales, on edges of creeks and lagoons, and on sand flats. Examples can be seen at Old Creek, Villa Creek, and along the beach in front of the MSSB campground.

Disturbance

Fire



Cattle Grazing

Storms

Exotic Plants

Disturbance can be natural or unnatural, and therefore beneficial or detrimental. Ecology is the study of species, processes (including disturbances), and the interactions of species, processes, and the environment. Without all of these elements in a "balanced" state, ecological systems begin to degrade.

Natural disturbance includes storms, wave wash, fire, and flooding. Local ecosystems have adapted to these disturbances over thousands of years, and in fact rely on them to maintain ecosystem health and species diversity. While the aftermath of a flood or fire may seem like devastation, these are necessary processes that, if absent, will lead to ecosystem decay.

Unnatural disturbance is mainly associated with the accelerated pace of change caused by humans, and includes development, exotic plant introduction, cattle grazing, and a myriad of associated activities that alter species composition and behavior. Many native species are displaced by unnatural disturbances and ultimately face extinction. Because of the recent arrival and acceleration of unnatural disturbances, species have not had enough time to evolve and adapt to these new conditions.

Ultimately, most loss of biodiversity, habitats, species, and the general beauty of our natural world will not be attributable to any unavoidable natural change, but due to our excess and carelessness. These failures on our part are readily visible as disturbances both at the local scale (such as erosion or exotic plant invasion), and at the global scale (global warming, ozone depletion, etc.).

Estero Bay Area Properties Managed by the California Department of Parks and Recreation

Park Codes

EB "Estero Bluffs" State Park property

HC **"**Harmony Coast" State Park property

LOOR Los Osos Oaks State Reserve

MBSP Morro Bay State Park

MDO Montana de Oro State Park

MSSB Morro Strand State Beach

the flora

Azollaceae Mosquito Fern Family

Azolla filiculoides

MOSQUITO FERN

Habitat: Common in slow moving water or ponds.

Notes: Large mats may form over the surface of the water and may turn reddish in summer. Scale-like leaves. Often found with duckweed (*Lemna* spp.). (All Park Units)

Blechnaceae Deer Fern family

Woodwardia fimbriata

GIANT CHAIN FERN

Habitat: Typically found near streams and springs.

Notes: A conspicuous fern with giant compound leaves emanating from a single point in the ground. The elongated sori (spore packets) are arranged in a chain-like pattern. (LOOR, MDO)

Dennstaedtiaceae Bracken family


Pteridium aquilinum* var. *pubescens

BRACKEN FERN

Habitat: Diverse habitats, riparian zones as well as open dry chaparral/coastal scrub.

Notes: Leathery and quite large, this is one of the most widespread ferns in California. Can be toxic if ingested by humans and livestock. Round sori are covered by a papery flap called an indusium. (EB, LOOR, MDO, MSSB, MBSP)

Dryopteridaceae Wood Fern family


Polystichum munitum

WESTERN SWORD FERN

Habitat: Shaded slopes, rocky outcrops.

Notes: This species is easily recognized by looking at an individual leaflet. Thick leathery leaves. The base of the leaflet is offset and leads up to a point, reminiscent of a hilt on a sword. (MDO)

Equisetaceae Horsetail family



Equisetum telmateia braunii

HORSETAIL

Habitat: Riparian zones, stream banks, seepage areas.

Notes: Very distinct, with a feathery top when in bloom. Leaves are reduced to black scales. The terminal cone-like structure is called a sporangiophoreand contains the spore bearing structure responsible for reproduction. Prior to flowering, the tips can be used to clean pots and pans, giving it the less commonly known nickname "scouring rush." Spreads by rhizomes, often forming large stands. (EB, LOOR, MBSP, MDO)

Polypodiaceae Polypody family



Polypodium californicum

CALIFORNIA POLYPODY

Habitat: Shaded canyons, streambanks, north-facing slopes, roadcuts, cliffs, coastal bluffs, rocks.

Notes: Common in our area, the sori are generally round. May be confused with *P. scouleri* due to individual variation of each species. (MBSP, MDO, HC)

Polypodium scouleri

LEATHER LEAF FERN

Habitat: Rocky outcrops, moist logs, places of heavy salt spray or fog drip.

Notes: The leaves vary in size depending on the substrate, however, the leathery feel of this species, as well as distinctly oval shaped sori, sets it apart from the rest of the *Polypodium* spp. Uncommon here. (MBSP-Morro Rock)

Pteridaceae Brake family

Adiatum aleuticum

FIVE-FINGER FERN

Habitat: Shaded, moist, rocky zones and canyons.

Notes: Leaflet margins curl under, covering the sori as a false indusium. Very distinct fern with leaves projecting out resembling an open hand. Found in MDO along shaded creeks.


Adiantum jordanii

CALIFORNIA MAIDEN-HAIR

Habitat: Riparian zones, shaded woodlands.

Notes: A very soft and fragile fern, this species is recognized by its thin black stems and compound fan shaped leaves. Leaflet margin curls under, concealing the marginal sori (a false indusium). (MDO)


Pallea andromedifolia

COFFEE FERN

Habitat: Open wooded or rocky slopes, generally in dry areas.

Notes: Locally seen most often between rocks in coastal scrub. Thick leaflets, marginal sori, stem and rachis (side stems) are tan. Has a long creeping rhizome and the leaflet margin curls under in a false indusium. (HC, MBSP, MDO)

Pellaea mucronata

BIRD'S FOOT FERN

Habitat: Rocky, dry areas, mainly in chaparral.

Notes: This species is easily identifiable with its dark brown stems, leaf and leaf segments that are reduced and come to a point. Thick leaflets with recurving margins. Marginal sori. Uncommon in this region, yet it can be found in abundance in certain parks, especially in rocky areas. (EB, MBSP, MDO)

Pentagramma triangularis

GOLDBACK FERN

Habitat: Shaded slopes, rocky outcrops.

Notes: Easily identifiable with its signature gold dusted back. Overall leaf shape or outline is triangular. Dark stem and rachis and scattered sori. You must look carefully to find this plant due to its typical presence beneath dense shrubs. (MBSP, MDO)

Selaginellaceae Spike-moss family

Selaginella bigelovii

SPIKE-MOSS/RESURRECTION PLANT

Habitat: Commonly seen on rocky outcrops, shaded or open.

Notes: A low ground cover that inhabits exposed rocks. The reproductive parts are difficult to see and require microscopes for direct observation. Will appear brown and dead in dry seasons but will become green after rains. This is fern ally, not a true moss. The true mosses are discussed on page 162. (EB, MBSP, MDO)

Pinaceae-Pine Family



Pinus muricata

BISHOP PINE

Habitat: Locally, a Bishop pine forest occurs on the ridge just south of the Coon Creek Trail parking lot. Isolated individuals are found throughout MDO and additional forests extend into the Irish Hills. Forms closed cone pine forest, but is also fund in oak woodland, chaparral, and even coastal scrub dunes.

Notes: This is the only pine native to our area of study. It is easily distinguished from introduced pines by the presence of 2 needles per fascicle (bundle). The bark is brown with rough ridges and the seed cones have scale prickles. (MDO)

Aceraceae Maple family

Acer negundo* var. *californicum

BOX ELDER

Habitat: Along streams.

Notes: Locally uncommon. A dioecious tree 6-20 meters, but seen locally as a small weedy tree. Used as an ornamental. In Chorro Cr. at MBSP.

Anacardiaceae Sumac or Cashew family

Toxicodendron diversilobum

POISON OAK

Habitat: Diverse habitats; oak woodlands, riparian zones, chaparral, scrub.

Notes: Probably the most common and least recognized plant in California. It can be a vine, shrub, or small tree, but its signature look is "leaves of three" with the middle most leaflet having a petiole. Deciduous. Contact with this plant can cause serious skin irritation. Unlike *Rubus ursinus* (California Blackberry), the three leaves of Poison Oak lack spines. (All Park Units)

Apiaceae Carrot family


Hydrocotyle verticillata

MARSH PENNYWORT

Habitat: On the surface of water.

Notes: A creeping aquatic plant found at the Audubon Sweet Springs Preserve in Los Osos. Leaf blade is round and peltate (stem attaches at center, appearing umbrella-like).


Sanicula crassicaulis

SANICLE

Habitat: Open slopes, grasslands, chaparral.

Notes: A very common component of most communities. It has many small umbrella-like clusters of yellow flowers. The leaves are typically basal but become cauline when the plant begins to flower. (MBSP, MDO)



Sanicula maritima

ADOBE SANICLE

Status: 1B/SR/NONE

Habitat: Coastal grassy wet meadows, chaparral, coastal scrub, valley and foothill grasslands associated with clay or serpentine outcrops, wetlands.

Notes: Endemic to San Luis Obispo County. Development and loss of available habitat are the main threats. A perennial with a tap root and simple leaves, leaves vary from entire to pinnately lobed, margins slightly toothed, if at all, both bisexual and staminate yellow flowers, fruits have stout curved prickles covering the upper portion with few on the lower portion. Seed face is concaved. Flowers February to May. (HC)

Asteraceae Sunflower family



Achillea millefolium

COMMON YARROW

Habitat: Diverse habitats, from sand dunes to open chaparral

Notes: This distinct plant has an umbrella head of white to pink flowers and highly segmented leaves. The name "millefolium" literally means "a thousand leaves." (All Park Units)

Ambrosia chamissonis
BEACH-BUR

Habitat: Beaches, coastal dunes.

Notes: A matting plant, perfect for dune stabilization. In its fruiting stage, this species forms sharp burs used for seed dispersal. The flower stalks are brown and not very showy and male and female flowers are separate on same inflorescence. The photographs above show the plant, seeds, female flower and male flower (male and female were on same inflorescence). Seeds are armored, flowers are not. (EB, MSSB, MDO, MBSP)

Artemisia californica
CALIFORNIA SAGEBRUSH

Habitat: A dominant component of coastal scrub

Notes: Not technically a "sage," this aromatic species is very common and forms the basis for typical California coastal scrub. Leaves are highly reduced and pungent. (All Park Units)

Artemisia douglasiana
MUGWORT

Habitat: Open to shaded, moist regions, often found in riparian zones.

Notes: Morphologically, this species looks nothing like its more dominant relative, *Artemesia californica*. However, the scent of the leaves is near identical, as well as the flowering structures. Leaves have lobed margins and are bicolored due to dense hairs on the underside (dark green on top, soft and white below). (All Park Units)

Artemesia dracunculus

TARRAGON

Habitat: An erect perennial from rhizomes to about 1 meter. Leaves are dark green and slightly sticky, sometimes tarragon-scented. Most common behind coastal dunes.

Notes: Occurs in a stand on sandy soils at south end of Old Creek at MSSB.

Aster chilensis

ASTER

Habitat: Along streams, springs, and low valleys near coast and inland to Paso Robles.

Notes: Found in early May along Coon Creek Trail in MDO. A perennial with a cyme inflorescence and violet ray flowers.

Baccharis douglasii

MARSH BACCHARIS

Habitat: Salt marshes, riparian edges.

Notes: This perennial subshrub typically has greater than fifty flowers per head. It is usually a tall stalk with finely toothed leaves. Young foliage is easily confused with *Artemesia dracunculus*. (MBSP, MSSB, MDO)


Baccharis pilularis
COYOTEBUSH

Habitat: Coastal bluffs, oak woodlands, grassland communities.

Notes: Another of the common shrubs of California, this plant can be seen almost everywhere. This shrub has smaller randomly toothed, dark green leaves, and typically flowers in the fall, when small white wind-transported seeds can be seen. This is often the only native that can survive in non-native grasslands and other disturbed areas. (All Park Units)


Chaenactis glabriuscula
PINCUSHIONS

Habitat: Typically seen in dry places in dunes or other sandy areas.

Notes: The only yellow form of this genus, this annual can be identified by its "three pronged" outside petals and its basal dissected leaves. Disk flowers form sphere-like head with ray flowers emerging below. (MBSP)


Circium occidentale* var. *compactum

COMPACT COBWEBBY THISTLE

Status: 1B/None/None

Habitat: Coastal bluffs

Notes: Purple flowers when in full bloom. Called a cobwebby thistle due to the cotton-like trichomes (hairs) in its flower head, this rare variation of the prototypical *C. occidentale* is only found on coastal bluffs and dunes. The rugged nature of this environment causes it to become compact and low growing, as in the center photograph. (HC)



Circium occidentale* var. *occidentale

COBWEBBY THISTLE

Habitat: Coastal dunes, grasslands, scrub, and oak woodlands.

Notes: Purple flowers when in full bloom. This is the more common variety in our area. The features of *C. o.* var *occidentale* are the same as *C. o. compactum*, except that it grows to about 1.5 meters tall. This variety grows further inland, away from the immediate coast. (EB, HC, MDO)



Ericameria ericoides
MOCK HEATHER

Habitat: Stabilized sand dunes, inland sandy regions.

Notes: A common component of the dune communities in and around Morro Bay, this low growing shrub is easy to identify. The stem is white pubescent and the leaves are reduced, grooved, crowded, and often appearing as a fan shaped fascicle. (MBSP, MSSB, MDO, LOOR)


Erigeron blochmaniae
BLOCHMAN'S LEAFY DAISY

Status: 1B/None/None

Habitat: Stabilized sand dunes.

Notes: The stem is minutely hairy. The ray flower petals are purple with white. The long slender leaves are evenly spaced and slightly folded, appearing grooved. This plant is rare due to coastal development. (MBSP, MDO, MSSB)


Erigeron glaucus

SEASIDE DAISY

Habitat: Coastal bluffs.

Notes: A perennial from thick rhizomes. This low-growing plant is found hanging on coastal bluff edges. Numerous stout flowers are purple and showy. More common north of Cambria. (MDO, EB, HC)


Erigeron sanctarum

SAINT'S DAISY

Status: 4/None/None

Habitat: Coastal scrub or woodland in firm sandy soil near coast.

Notes: Long green leaves with short stiff hairs. Purple ray petals are sparse. Uncommon. Found only on the Channel Islands and in San Luis Obispo County. Locally, seen along Bloody Nose Trail (MDO).

Eriophyllum confertiflorum
GOLDEN YARROW

Habitat: Can be found from stabilized dunes to mature chaparral.

Notes: This species has 3-5 lobed reduced leaves, whitish stems, and bright yellow flowers. Leaves are green on top and white on bottom. This plant does or does not contain ray flowers, depending on the location. A very common plant. (MBSP, MSSB, MDO, HC)

Eriophyllum multicaule

MANY STEM WOOLY SUNFLOWER

Habitat: Coastal scrub, chaparral.

Notes: This prostrate growing annual is typically seen in times of anomalously high amounts of rain. When seen in great abundance it can result in a "carpet" of yellow flowers between large shrubs. More common in eastern San Luis Obispo County. (MBSP, MDO)

Eriophyllum staechadifolium

SEASIDE WOOLY SUNFLOWER

Habitat: Coastal bluffs, stabilized dunes, coastal scrub.

Notes: This subshrub is similar to *E. confertiflorum*, yet its leaves are much larger, highly dissected, and very white tomentose on the bottom. (MBSP, MSSB, MDO, EB, HC)

Euthamia occidentalis

WESTERN GOLDENROD

Habitat: Ditches, meadows, marshes, streambanks.

Notes: Found locally in relatively moist areas near the coast. (Villa Creek at EB)



Gnaphalium bicolor

TWO-TONE EVERLASTING

Habitat: Dry slopes, chaparral, coastal scrub, occasionally on stabilized sand dunes.

Notes: A very pungent smelling plant, almost citrus-like. Easily distinguished from other everlastings by its two-toned leaves, which are bright green on the upper surface and densely hairy white color on the undersurface. (MBSP, MDO)


Gnaphalium californicum

CALIFORNIA EVERLASTING

Habitat: Dry slopes, chaparral, oak woodland.

Notes: Not as scented as *G. bicolor*, this plant is one of the most common everlasting found in California. Both sides of the leaf are dark green. While the heads can be pinkish, the majority of the time they are white with yellow centers. (EB, MBSP, MDO, MSSB)


Gnaphalium purpureum

CUDWEED

Habitat: Disturbed areas, roadsides.

Notes: A distinctly weedy looking everlasting with brown and dead looking flowers and white pubescent leaves. Commonly found low growing, branching or not. (EB, MBSP, MDO)


Grindelia stricta

GUM PLANT

Habitat: Coastal bluffs, sand dunes.

Notes: Called the gum plant because of the sap that forms on the top of a flower bud. This species has a stout stature and is commonly seen in right on coastal bluffs. The leaves are tough and rigid and many green bracts subtend the flower head. Two varieties intergrade in this region: var. *platyphylla* with its rounded leaf tips, and var. *stricta* which has acute leaf tips. (EB, MDO)

Hazardia squarrosa

SAW-TOOTHED GOLDENBUSH

Habitat: Common near coast and in rocky areas.

Notes: A low growing shrub of coastal bluffs and coastal scrub. Leaves leathery, stiff, toothed, and sparsely hairy. Compare to *Isocoma menziesii*. (HC, EB, MSSB, MDO, MBSP).

Hemizonia congesta luzulifolia

HAYFIELD TARWEED

Habitat: Grasslands.

Notes: A common late season flower, this species is easily recognized by its white flowers with purple striping on the back. Leaves are reduced with glandular hairs and flower buds appear pink. In addition, this plant is quite sticky throughout. (EB, LOOR, MBSP, MDO)

Hemizonia increscens increscens

TARWEED

Habitat: Coastal grassland.

Notes: The prevalence of this species in grasslands can lead to the assumption that it is an introduced species. Fortunately, this species is an important component of the grassland community. The yellow petals have three lobes and the stamens are black. (EB, MBSP)

Heterotheca grandiflora

TELEGRAPH WEED

Habitat: Disturbed areas, sand dunes.

Notes: This species is a common disturbance follower and often signifies the first stage of a system going through succession. Tall stalks of sticky stems and leaves are lined with flowers along the entire length. After the removal of exotic ice plant and beach grass at MSSB, multitudes of this species became established. (EB, MBSP, MDO, MSSB)


Isocoma menziesii

GOLDENBUSH

Habitat: Sandy soils, coastal bluffs.

Notes: A low-growing shrub found locally in dunes and on coastal bluffs. Distinguished from *Hazardia squarrosa* by leaves that are softer and have more trichomes (hairs). (HC, EB, MSSB, MDO)


Jaumea carnosa

JAUMEA

Habitat: Coastal salt marshes, coastal bluffs.

Notes: A common component of the salt marsh community. This plant has fleshy leaves, and is generally seen as a ground cover carpeting marshes due to its weak stem. The leaves are simple and opposite each other, and the petals appear sparse. (EB, MBSP, MSSB)

Lasthenia californica

GOLDFIELDS

Habitat: Diverse habitats. In our area it is common on coastal bluffs.

Notes: In years of good rain, this species is abundant across California. It is a rather conspicuous low growing plant. The base of the flower is flat with a signature yellow "aster" look. The leaves are fleshy only when found near the coast. (EB)

Layia glandulosa

WHITE LAYIA

Habitat: Open sandy soils.

Notes: This genus is easy to recognize due to the rows of ray flowers and the three lobes each ray petal exhibits. This species is generally found in decent rain years and is easy to identify by its white or light yellow color. (MBSP)


Lessingia filaginifolia

CALIFORNIA ASTER

Habitat: Diverse habitats; coastal scrub, grasslands, oak woodlands.

Notes: Very common in coastal areas. A variable species, some individuals can have white pubescent leaves while others are green and quite aromatic. Nevertheless, the signature look is the blue-white ray flower with a yellow center. (EB, LOOR, MBSP, MDO, MSSB)



Madia sativa

COAST TARWEED

Habitat: Grasslands.

Notes: This species of tarweed is quite sticky and has a resin-like aroma due to its gland-tipped hairs. This plant is tall (near 2 m) and stalky, and the yellow flowers barely protrude from the phyllaries that house them. (EB, LOOR, MBSP, MDO)

Malacothrix incana

DUNEDELION

Status: 4/None/None

Habitat: Sand dunes.

Notes: This is the only perennial plant in this genus to have yellow flowers. The leaves are bluntly dissected, and the base of the flower has 3-6 rows of phyllaries. This plant has a ligulate head with no disk flowers. (MDO)

Senecio blochmaniae

SENECIO

Status: 4/None/None

Habitat: Stabilized sand dunes.

Notes: A locally common plant found on the sand dunes, this plant is easily recognized by its single stem and long, wiry leaves with a slight central groove. The ray flowers seem to mimic the leaves by being long and slender but are colored bright yellow. Impacted by coastal development. (MSSB, MDO)

Solidago confinis

SOUTHERN GOLDENROD

Habitat: Riparian zones; streams, creeks, marshes.

Notes: This plant is uncommon in our area, but becomes more common south of here. It is distinguished by its panicle-like arms of small golden flowers and tough leaves. (MDO)

Stephanomeria cichoriacea

WIRE-LETTUCE

Habitat: Dry, rocky slopes, outcrops.

Notes: These are perennial plants from a large root crown. The flowers arise on a tall inflorescence. The leaves excrete a milky sap when broken. Occasional in our area. (HC, EB, MBSP, MDO)

Berberidaceae Barberry family

Berberis aquifolium* var. *dictyota

OREGON GRAPE

Habitat: Coniferous forests, oak woodland, rocky outcrops in coastal scrub and chaparral.

Notes: The holly-like leaves have sharp point at the tip of each serration, are opposite, and are deciduous. This species is unusual to this area. It is found at the highest peak of Cerro Cabrillo at MBSP and on a lone rocky outcrop at HC, being most common in the Pacific Northwest.

Boraginaceae Borage family

Amsinckia spectabilis

FIDDLENECK

Habitat: Found locally in sandy soils and grasslands.

Notes: Very common in good rain years, and is easily distinguished by its yellow tube flowers curling "like a caterpillar on a stick." This plant has small bristles that give it a rough feel. (All Park Units)

Cryptantha sp.

POPCORN FLOWER

Habitat: Sandy soils, chaparral, coastal scrub

Notes: A common coastal scrub/chaparral wildflower. These small white flowers can be seen in great abundance after the rainy season. (LOOR, MBSP, MDO)

Heliotropium curassavicum

HELIOTROPE

Habitat: Common in saline, alkaline, or moist ground in valleys and along seashore.

Notes: Perennial low growing plant, often in alluvial deposits and along road edges. This plant has fleshy leaves and an inflorescence that unfurls as a cyme. (HC, MBSP, MDO, MSSB, EB)

Brassicaceae Mustard family

Cardamine californica

MILK MAIDS

Habitat: Shaded sites, coastal scrub, slopes.

Notes: A common annual in shaded areas. It has white petals arranged in a cross, typical of this family. Occasionally, this species appears only with the flower stalk because the leaves are typically hidden in the dense thicket it emerges from. (MBSP, MDO, HC)

Dithyrea maritima

BEACH SPECTACLEPOD

Status: 1B/ST/None

Habitat: Sand dunes.

Notes: This species is rare due to increasing coastal development. The flowers are unique; their cream-colored petals curve back. Hard to find, small, seasonal. (MDO)


Erysimum insulare suffrutescens

SUFFRUTESCENT WALLFLOWER

Status: 4/None/None

Habitat: Mainly **s**tabilized sand dunes, but also Morro Rock.

Notes: This species is a true Morro Bay native, because this subspecies occurs only here. The species is identified by its yellow flowers slightly curved back, and the many branches each plant exhibits (MBSP, MSSB, MDO)

Caprifoliaceae Honeysuckle family


Lonicera hispidula* var. *vacillans

CALIFORNIA HONEYSUCKLE

Habitat: Riparian zones, oak woodlands

Notes: This sprawling species forms part of the thicket seen in dense riparian zones. This species is identified by its tube-like flowers and fused leaves around the stem. Another species sometimes seen in this area, *L. interupta*, lacks the little glands found on the flower of *L. hispidula*. A striking plant in bloom. (LOOR, MDO)



Lonicera involucrata* var. *ledebourii

TWINBERRY

Habitat: Coastal areas with persistent moisture.

Notes: Identified by its twin flowers subtended by red bracts and fruits, hence the name twinberry. A common plant in riparian zones of our region, and can be found wherever there is moisture. (LOOR, MBSP, MDO)



Sambucus mexicana

ELDERBERRY

Habitat: Riparian zones, oak woodlands.

Notes: This plant is easily recognized by pinnately compound leaves with a cream colored umbel of flowers and blue berries. The leaflets are opposite each other with a slight fold down the center and slightly toothed margins. (LOOR, MBSP, MDO)


Symphoricarpos mollis

SNOWBERRY

Habitat: Rocky slopes, oak woodlands, shaded areas.

Notes: The leaves of this species are soft and hairy. It can be seen sprawling in the under story of an oak tree, climbing on and around rock outcrops, or openings in riparian areas. (LOOR, MBSP, MDO)

Caryophyllaceae Pink family


Arenaria paludicola

MARSH SANDWORT

Status: 1B/SE/FE

Habitat: Perennial, often supported by surrounding vegetation. Boggy meadows and marshes.

Notes: This federally listed plant was recently thought to be reduced to a single local population in Black Lake Canyon on the Nipomo Mesa. Though not known to occur historically in Morro Bay, a population has been established here by conservationists. Recently reported from Mendocino County and may be present elsewhere.

Silene laciniata major

INDIAN PINK

Habitat: Locally common in sandy soil and bluffs along the coast, coastal dunes, shrubby areas, occasional rocky outcrops.

Notes: A perennial with long thin stems and conspicuous bright red flowers. This species is separated from another closely related species, *S. californica*, by having slender leaves throughout. (LOOR, MBSP, MDO)

Spergularia macrotheca* var. *macrotheca

SAND-SPURREY

Habitat: Coastal bluffs, alkaline flats, and salt marshes.

Notes: A low-growing perennial with fleshy sticky leaves and flowers that are white to purple. Locally common on wind-swept coastal bluffs. (MDO, EB, HC)

Chenopodiaceae Goosefoot family


Atriplex californica

ATRIPLEX

Habitat: Locally found growing on weathered coastal bluff faces in compacted soils and salt marshes.

Notes: A prostrate plant with reddish stems. Leaves are smaller than the other native *Atriplex* species in our area. *Atriplex* species in general are often whitish due to salt excreted through specialized glands. (HC, EB, MSSB, MDO)



Atriplex leucophylla

ATRIPLEX

Habitat: Foredunes.

Notes: A common coastal native. Leaves are fleshier and thicker than *A. californica.* Overall, this species is white, with an egg shaped leaf. In the axils of each leaf is either a male or female flower, which are both found on the same plant. (MSSB, EB, MDO)

Atriplex triangularis

SPEARSCALE

Habitat: Estuary edges, saltwater marshes and other moist areas along the immediate coast.

Notes: Sometimes mistaken by the foolhardy as a weed. The leaves are extremely triangular, as the name indicates. As with most Atriplex, this species has separate male and female flowers. Typically found around the Morro Bay estuary. (MBSP, MSSB, MDO)

Atriplex watsonii

ATRIPLEX

Habitat: Sand dunes, salt marshes.

Notes: This species is generally much more low growing than *A. leucophylla*. The leaves are opposite unlike any other *Atriplex* in this region. It is dioecious, which means that an individual plant is either a male or female, but never both on the same individual. (MBSP, MSSB)

Chenopodium californicum
CALIFORNIA GOOSEFOOT

Habitat: Coastal scrub, chaparral, generally open sandy areas.

Notes: This perennial is commonly seen and passed off as a weed. It is low growing, spreading and prostrate. The foliage arises seasonally and it grows rapidly from an underground root system. It has irregularly toothed triangular leaves. You will typically see this plant in a small bunch here and there. (LOOR, MBSP, MDO, MSSB)

Salicornia virginica

PICKLEWEED

Habitat: Salt marshes, alkali flats

Notes: The most common plant found in the Morro Bay estuary. This species is fleshy and reduced to nothing more than a persistent groundcover. It contains no true leaves, but its stems appear to branch much like a cactus. The reddish color of *Salicornia* is attributed to a salt excretion adaptation. Salt is pushed up to the top of the plant where it is eventually shed as dead tissue, thereby reducing the total salt concentration in the plant body. (EB, MBSP, MSSB)



Suaeda californica

CALIFORNIA SEA-BLITE

Status: 1B/SR/FE

Habitat: Fringes of Morro Bay salt marsh, lagoon mouths, strand, and coastal bluffs.

Notes: This succulent shrub has been listed as endangered due to loss of estuarine habitat. Speculated to have once been widespread in central and northern California, this plant is now limited to the Morro Bay area (from Los Osos to Villa Creek) and is re-introduced in San Francisco Bay. The taxonomic distinction between this plant and *S. taxifolia* can be quite confusing. (EB, MBSP, MSSB, MDO)

Cistaceae Rock-rose family


Helianthemum scoparium

RUSH-ROSE

Habitat: Sandy open areas in chaparral and coastal scrub.

Notes: A unique and striking subshrub common in the maritime chaparral and dunes of this area. It has yellow flowers that are reminiscent of wild roses. (MDO, LOOR, MBSP)

Convolvulaceae Morning Glory family



Calystegia macrostegia

MORNING GLORY

Habitat: Rocky slopes, coastal scrub, chaparral.

Notes: The most common native morning glory in and around Morro Bay. This plant typically grows as a vine on shrubs and small trees. Trumpet flowers are easily seen. The leaf itself is narrow and triangular, with the base showing two angles on each side. (EB, LOOR, MBSP, MDO, HC)

Calystegia soldanella

BEACH MORNING GLORY

Habitat: Coastal dunes

Notes: This morning glory is unique due to its location on the dunes and leaf morphology. The leaf is kidney shaped, slightly crinkled, and more or less fleshy. This small compact plant also exhibits a trumpet shaped flower typical of a morning glory. (MDO)


Calystegia subacaulis episcopalis

SAN LUIS OBISPO COUNTY MORNING GLORY

Status: 1B/None/None

Habitat: Coastal scrub, open grasslands

Notes: This morning glory is not a true vine like *C. macrostegia*. It is a compact ground cover most often found in native grasslands. Leaf is triangular and lower leaf tips are rounded. Has a more round overall leaf shape than other *Calystegia* species. Flower petals are distinctly lobed. (EB, LOOR, MBSP, HC)

Cornaceae Dogwood family



Cornus sericea

AMERICAN DOGWOOD

Habitat: Riparian zones.

Notes: This plant is often seen as a dense tree-like shrub lining creeks and streams. It is easily recognized by its signature and prominent vein pattern on the leaves. In addition, the branches are reddish to purple. Inflorescence is a cyme. (LOOR, MDO)

Crassulaceae Stonecrop family


Crassula connata
PYGMY-WEED

Habitat: Open areas in rocky outcrops and sandy locations.

Notes: A common "belly botany" species, in that, it is difficult to see if one is not looking carefully. This is a tiny succulent that typically covers open spots in any community. (EB, LOOR, MBSP, MDO)


Dudleya blochmaniae blochmaniae

BLOCHMAN'S DUDLEYA

Status: 1B/None/None

Habitat: Open areas in clay grasslands or rocky outcrops.

Notes: Another "belly botany" specimen this rare find is difficult to see. The succulent foliage is miniature and spoon shaped. The star-shaped flowers have white petals with a pink stripe or midvein along the underside. (EB, MBSP, MDO)


Dudleya caespitosa

DUDLEYA

Habitat: Coastal areas, rocky outcrops, dunes.

Notes: Leaves often have a white powdery coating. This is a common plant seen on coastal bluffs and rocky outcrops, in our area. When in flower this species is quite striking with bright yellow flowers. Plants on Morro Rock are more compact than elsewhere and have a twisted appearance to the leaves. (EB, MBSP, MDO)



Dudleya lanceolata

DUDLEYA

Habitat: Rocky outcrops, coastal bluffs, stabilized dunes.

Notes: This species is quite distinct with its thin, elongated, lance shaped leaves. Sometimes difficult to separate from *D. caespitosa* because the two readily hybridize, as on White Point. Leaves are typically green but sometimes are reddish with white coating. (EB, MBSP, MDO, HC)

***Dudleya* spp.**

DUDLEYA

Habitat: Coastal bluffs, rocky outcrops, steep slopes.

Notes: Dudleya identification can be confusing in areas where species hybridize, individual variation occurs, multiple species are found, and keying features are inconclusive. In our area, especially north at HC, can be found the similar looking *D. palmeri, D. lanceolata*, *D. caespitosa*, and possibly *D. farinosa*. This entry is included here to remind the reader that multiple *Dudleya* species may be found here. (All Park Units)

Cucurbitaceae Gourd family



Marah fabaceus

MAN-ROOT

Habitat: Coastal scrub, chaparral, oak woodlands.

Notes: Common plant seen in most areas, this vine has a distinct leaf pattern. The fruit is also distinct, forming a ball armed with flexible prickles. This plant dies back each year to only a large underground tuber. (All Park Units)

Cuscutaceae Dodder family


Cuscuta spp.

DODDER

Habitat: Parasitic vine found on all plant forms.

Notes: The orange color makes it noticeable from a distance climbing on other plants. Identification to the species level is quite difficult due to the microscopic size of the reproductive structures. This plant will germinate by seed in the soil, grow up a host plant, attach to the host plant, and then break its soil connection to become completely parasitic on the host. (EB, LOOR, MBSP, MDO, MSSB)

Ericaceae Heath family



Arctostaphylos morroensis

MORRO MANZANITA

Status: 1B/None/FT

Habitat: Los Osos area Baywood fine sands.

Notes: This species is endemic to our area. Its range is limited and threatened due to coastal development and the introduction of eucalyptus trees. It has a petioled leaf and a pubescent ovary inside the flower. (LOOR, MBSP, MDO)


Arctostaphylos osoensis

OSO MANZANITA

Status: 1B/None/None

Habitat: Chaparral, oak woodland.

Notes: This species has been incorrectly reported as *A. cruzensis* based on old taxonomy. However, it has since been correctly identified as a dominant species in the chaparral of Cerro Cabrillo. Look for clasping leaves around the stem and a glabrous ovary. (MBSP)


Vaccinium ovatum

CALIFORNIA HUCKLEBERRY

Habitat: Edges and clearings in chaparral.

Notes: A stout evergreen shrub found along the edge of the Bloody Nose Trail on a north facing slope in MDO. Reddish stems with thick green alternate leaves.

Euphorbiaceae Spurge family


Croton californicus

CROTON

Habitat: Sandy areas, chaparral, coastal scrub, stabilized dunes.

Notes: A common component of most open and dry communities in this region. It is a distinct prostrate plant that stands out due to its gray color. This plant has elongated leaves with a fold down the midvein and an open branching pattern. (LOOR, MBSP, MDO, MSSB)


Eremocarpus setigerus

TURKEY MULLEIN,

Habitat: Coastal areas in fields, roadsides, and dry open locations.

Notes: A pleasant looking grey-green annual in disturbed open areas. This is a low growing plant with soft fuzzy leaves. (HC, EB, MSSB, MBSP, MDO)

Fabaceae Legume family


Astragalus nuttallii* var. *nuttallii

NUTTALL'S MILK VETCH

Status: 4/None/None

Habitat: Rocky outcrops, sandy areas, coastal bluffs, grasslands.

Notes: Common. It can be spreading or erect depending on the location. The fruits are quite distinct because they inflate. Inflorescence is a raceme of whitish flowers. The leaflets often have pubescence and are approximately 25 per leaf. This and other milk vetches are toxic to livestock. (EB, MBSP, HC)


Lathyrus vestitus

SWEET PEA

Habitat: Chaparral, oak woodlands, riparian zones.

Notes: This plant can be seen in Coon Creek as part of the riparian community. The flowers are variable, but the majority have a purple banner with white wings and keel. Typically seen as a vine on other shrubs. Stems are without a winged margin. (MBSP, MDO)


Lotus heermannii* var. *orbicularis

LOTUS

Habitat: Coastal scrub, chaparral, coastal dunes.

Notes: A very common mat-forming plant in open and sandy areas. Overall, this species is very hairy compared to *L. scoparius*. (EB, LOOR, MBSP, MDO, MSSB)



Lotus scoparius* var. *scoparius

DEERWEED

Habitat: Chaparral, coastal scrub, coastal dunes.

Notes: A common dominant component of dry and sandy areas in this region. Can be rather showy when in bloom with many tiny yellow pea-shaped flowers. Leaves divided into three leaflets. Deciduous. (All Park Units)



Lupinus albifrons

SILVER LUPINE

Habitat: Open areas, rocky or sandy soils, floor beds of streams.

Notes: This plant is very similar in appearance to *L. chamissonis*. However, *L. chamissonis* occurs in our local dunes and sandy soils in the Los Osos area, whereas *L. albifrons* occurs inland on mainly non-sandy soils. *L. albifrons* has longer and more numerous leaflets and longer petioles than *L. chamissonis*. In the far right photograph above the small branch is *L. chamissonis* and the large branch is *L. albifrons*. (Interior MDO)


Lupinus arboreus

BUSH LUPINE

Habitat: Coastal areas, including bluffs and dunes.

Notes: In our area this species exhibits purple flowers, while in Pismo and Nipomo this species is always yellow. Purple flowers are also seen in the dunes at Vandenburg Air Force Base. CalTrans has used this species in roadside seed mixes, thereby confusing the original distribution of yellow and purple flowers. Look for green leaves and a glabrous banner back. This plant has a fleshier look overall compared to the woody look of *L. albifrons* and the fuzzy look of *L. chamissonis*. (LOOR, MBSP, MDO, MSSB)


Lupinus bicolor

MINIATURE LUPINE

Habitat: Disturbed areas.

Notes: A distinct annual lupine with hairy miniature leaflets and miniature flower head. An annual plant with the upper leaf surface glabrous and the inflorescence in whorls of flowers up the stem. The fruit (seed pod) is also hairy. Mostly seen in disturbed sandy areas. (LOOR, MBSP, MDO)



Lupinus chamissonis

SILVER DUNE LUPINE

Habitat: Coastal dunes, coastal dune scrub.

Notes: A major component of the coastal dune system. This perennial species serves as a larval food source for the Morro blue butterfly. The flower is fragrant and purple, while the leaflets are silvery hairy and the petiole is shorter than the leaflets. (MBSP, MDO, MSSB)


Lupinus hirsutissimus

STINGING LUPINE

Habitat: Rocky outcrops, burn sites.

Notes: This low-growing annual lupine has many tiny stiff hairs which do not sting. This plant is also identified by its magenta colored flowers. (MDO)


Lupinus microcarpus

CHICK LUPINE

Habitat: Open or disturbed areas.

Notes: One of the smallest annual lupines. Abundant, sometimes spread as seed on road banks. Inflorescence is narrow and elongated with whorls of flowers and seeds are mottled. Lower stems are hollow. (MDO, MBSP, LOOR)


Lupinus nanus

SKY LUPINE

Habitat: Disturbed areas, grasslands, sandy soils.

Notes: Petals are blue and white and flowers are in whorls. A hairy plant with hairy fruits. This annual species is common after a decent rainy season. Larger than *L. bicolor* or *L. microcarpus*. (EB)


Lupinus succulentus

ARROYO LUPINE

Habitat: Disturbed areas, grasslands.

Notes: One of the most common annual wildflowers seen in the spring. This species is identified by its broad succulent-like leaflets with a flattened or truncated apex on each leaflet as seen in the photographs above. Flowers are purple. (EB, LOOR, MBSP, MDO)


Trifolium depauperatum* var. *truncatum

CLOVER

Habitat: Grasslands, coastal bluffs, coastal woodlands.

Notes: This species can be recognized by the inflated red corolla. Beneath the flower-head there is an involucre bract with all of the lobes free. (EB)


Trifolium fucatum

CLOVER

Habitat: Open grasslands, coastal bluffs.

Notes: This species is very easy to recognize due to its inflated white flowers and the large clover leaves. As with *T. depauperatum*, this species has an involucre bract with free and open lobes. (EB)


Trifolium monanthum* var. *monanthum

CLOVER

Habitat: Locally found in grasslands.

Notes: This plant was found recently at Estero Bluffs, which is an anomaly to our area. Identified by the one to six white trumpet flowers per flower head. (EB)


Trifolium willdenovii

CLOVER

Habitat: Heavy soils, serpentine derived soils.

Notes: Common clover seen in good rain years. The involucre bract beneath the flower is fused into a ring and finely lobed. The flower is magenta with a white tip. (EB, MBSP, MDO)



Vicia gigantea

GIANT VETCH

Habitat: Moist areas, thickets and riparian zones, along coastal bluffs, woodlands.

Notes: A robust climbing perennial vine with red-purple flowers. In shaded north facing slopes in MDO. Introduced vetch species are also common in our area.

Fagaceae Oak family



Quercus agrifolia* var. *agrifolia

COAST LIVE OAK

Habitat: Oak woodlands, chaparral.

Notes: Common tree seen in drainages on dry slopes as well as forming dense woodlands near the coast, including LOOR and the Elfin forest. This species is recognized by its broad tough leaves and hairy "armpits" (hairs in the vein axils) in the undersides of the leaves. May be shrubs when found in chaparral. In full sun, leaf margins tend to curl under and leaf size is smaller. Grazed areas surrounding Estero Bay once supported many more oak trees. (LOOR, MBSP, MDO)

Quercus wislizeni* var. *frutescens

INTERIOR LIVE OAK

Habitat: Chaparral.

Notes: This species is not normally found in our area, yet there is a single individual occurring in the grasslands of LOOR. Sharp points on the tip of the leaf serrations.

Frankeniaceae Frankenia family

Frankenia salina
FRANKENIA

Habitat: Salt marshes, alkali flats.

Notes: Common component of the Morro Bay estuary. Identified by the rolling of the leaf margins. Flowers are small and can be white, pink, or purple. Forms large mats that can blanket areas. (EB, MBSP, MDO)

Garryaceae Silk Tassel family

Garrya elliptica
SILK TASSEL

Habitat: Found locally in chaparral and wooded or riparian areas.

Notes: This plant can be as tall as a tree, and is often confused with *Lithocarpus densiflorus* (tan oak). The wavy leaves are quite hairy and sometimes appear gold. The most distinct character is the tan "silky" tassels that hang down. (MDO)

Grossulariaceae Gooseberry family

Ribes malvaceum* var. *viridifolium
CHAPARRAL CURRANT

Habitat: Oak woodlands, chaparral.

Notes: This species lacks the nodal spines typical of the genus. Clustered palmately lobed leaves are slightly sticky. Has large open branches and the inflorescence is a nodding raceme of pink flowers that can be striking in the spring. (MDO)


Ribes menziesii
CANYON GOOSEBERRY

Habitat: Oak woodland understory, chaparral.

Notes: This beautiful plant can be painful. It has three spines per node as well as internodal prickles or bristles. The leaf can be variable depending on the habitat, yet all are slightly sticky and pubescent with palmate lobing. Flower is distinctly two-toned magenta and white with a reflexed calyx. (LOOR, MDO, MBSP)


Ribes speciosum

FUSCHIA-FLOWERED GOOSEBERRY

Habitat: Coastal scrub, chaparral.

Notes: This species is quite unique and very striking when in bloom. May be large with numerous all red flowers. Nodal spines present but internodal bristles are variable. (MBSP, MDO)

Hydrophyllaceae Waterleaf family

Eriodictyon altissimum

INDIAN KNOB MOUNTAINBALM

Status: 1B/SE/FE

Habitat: Chaparral, restricted to the Irish Hills near Los Osos and San Luis Obispo.

Notes: In the Estero Bay area, this species has only been documented in six locations and in small numbers. Federally listed as endangered, this plant emerges from mature stands of chaparral. Branches are curved and wiry with long, slender, pungent leaves. (MDO)

Nemophila menziesii

BABY BLUE EYES

Habitat: Chaparral.

Notes: Much different than the individuals found as an understory component of oak woodlands and far inland in our county. Locally, it has light purple flowers and lacks the black dot on each petal. (MBSP)

Phacelia distans

PHACELIA

Habitat: Common in clay, rocky or sandy soils outside of dense vegetation, often on slopes.

Notes: Annual with highly lobed compound leaves. Along our coast the flowers are bright violet or blue. Locally common in Baywood fine sands. (MSSB, MDO, MBSP, LOOR)

Phacelia imbricata

PHACELIA

Habitat: Slopes, roadsides, flats, canyons, chaparral, woodlands, often rocky areas.

Notes: A large perennial *Phacelia* with substantial basal leaves. The compound leaves are broad and lobed, especially near the base. The inflorescence is a cyme with white or cream flowers. (MBSP, MDO)


Phacelia viscida
STICKY PHACELIA

Habitat: Coastal scrub, chaparral, shale soils.

Notes: This beautiful plant has flowers of deep purple-blue with white centers. Leaves are lobed, toothed, and can be quite sticky. Found most commonly off the Islay Creek trail in MDO.



***Phacelia* spp.**

PHACELIA

Notes: Various habitats. Above we see three unidentified *Phacelia* spp. From right to left, they were found along Coon Cr. Trail at MDO, a disturbed site at EB, and at LOOR. Flowers are white to purple, leaves are lobed to entire, and compound inflorescence is usually a scorpioid cyme.

Pholistoma auritum* var. *auritum

FIESTA FLOWER

Habitat: Oak woodlands, riparian areas.

Notes: The leaves of this species are deeply lobed, clasp the stem, and have tiny hooked prickles. Leaves and stems have tough hairs. (LOOR, MBSP, MDO)

Lamiaceae Mint family

Monardella undulata

CURLY-LEAVED MONARDELLA

Status: 4/None/None

Habitat: Sand dunes, coastal scrub.

Notes: This annual has the aroma of a strong mint. Easy to identify by its wavy margined leaves. Has a head of purple flowers. This rare plant can be quite abundant during years of good rain. (MBSP, MDO)


Salvia columbariae
CHIA

Habitat: Chaparral, coastal scrub, open sandy disturbed areas.

Notes: As with all *Salvia* spp., the flower petals are lobed and there are four-paired seeds (nutlets) per flower. This small annual can be seen in great abundance in years of good rain. This is an annual sage that has dense blue flowers arranged in a terminal cluster. Leaves are basal, textured, and deeply lobed. (MBSP, MDO)



Salvia mellifera
BLACK SAGE

Habitat: Coastal scrub, chaparral.

Notes: A common shrub in our area. The opposite leaves are textured, firm, and have a strong sage smell. Inflorescence is a spike of verticles (rings of flowers around the stem). Flowers can be white, pale blue, or lavender. (All Park Units)


Salvia spathacea
HUMMINGBIRD SAGE

Habitat: Oak woodland, coastal scrub, chaparral, open or shady areas.

Notes: Many large gland-tipped hairs make this plant sticky to the touch as well as sweet smelling. Inflorescence is a spike of verticles with bright pink/red flowers. The sagittate (arrowhead) leaves are opposite with bumpy margins. If you carefully remove a flower from the plant, you can taste the sweet nectar that is a favorite of hummingbirds. (HC, EB, LOOR, MBSP, MDO)


Satureja douglasii
YERBA BUENA

Habitat: Oak woodland, chaparral, coastal scrub

Notes: A common prostrate herb found oak woodlands and often roots at the nodes, forming mats. This species has strong minty smelling leaves. Small white flowers are found in leaf axils. Leaf margins with rounded teeth. (LOOR, MBSP, MDO, HC)

Stachys bullata
HEDGE-NETTLE

Habitat: Oak woodland, shaded coastal scrub, chaparral.

Notes: A common forb seen in oak woodlands, this species does not sting like other "nettles." The soft, hairy, opposite leaves are paired up and down the square stem and the flower head is pink to magenta in a loose verticle. When crushed the leaves emit a distinctive smell. (All Park Units)

Lauracae Laurel family

Umbellaria californica
CALIFORNIA BAY LAUREL

Habitat: Riparian areas, steep canyons, seeps.

Notes: A large common tree in the overstory of riparian areas and moist shaded wooded slopes. The foliage is aromatic and can be used in cooking. Alternate leaves are long, slender, and glabrous. (LOOR, MBSP, MDO)

Lennoaceae Lennoa family


Pholisma arenarium
SAND FOOD

Habitat: Dunes, sandy areas.

Notes: A root parasite common to various shrubs of the family Asteraceae. At first glance, this species looks fleshy and fungus-like. Purple and white flowers cover the entire above-ground portion of the plant. (MBSP, MDO)

Malvaceae Mallow family


Malvella leprosa
ALKALI MALLOW

Habitat: Moist alkaline soils, lagoon mouths or salt marshes.

Notes: A low growing plant. The leaves are geranium-like, slightly palmately lobed with dentate margins, and the trichomes (hairs) make it slightly soft white. The flower is cream-white and appears twisted or rolled up. (MBSP, MDO, HC)



Sidalcea malviflora
CHECKERBLOOM

Habitat: Open dry areas, mostly grasslands, road sides.

Notes: A common roadside wildflower. They exhibit two types of leaves: dissected at the base and reduced entire near the flower. Inflorescence is a raceme and the flower can vary from pinkish-purple to white. Thin petals and lobed petal tips. Look for a many-pronged style emanating from the center of the flower. (MBSP, MDO)

Myricaceae Wax Myrtle family



Myrica californica
WAX MYRTLE

Habitat: Moist areas in most habitats, including sand dunes, coastal scrub, riparian areas, and oak woodlands.

Notes: A robust evergreen mid-size tree. The leaves are a glossy green, scented, and crowded on the stem. The tip of the leaf is slightly pointed and the margins are bumpy to slightly wavy. Flowers are small and inconspicuous. (MBSP, MDO, MSSB)

Nyctaginaceae Four O'Clock family


Abronia latifolia
SAND VERBENA

Habitat: Strand, foredunes.

Notes: The leaf is thick and fleshy and as long as it is wide. The flower heads are yellow and sticky. This species and others in the same genus are mat-forming and can deal with the shifting nature of sand dunes. (MSSB, MDO)


Abronia maritima
SAND VERBENA

Status: 4/None/None

Habitat: Sand dunes.

Notes: Leaves are longer than they are wide and the flowers are typically a wine red. Fleshy and sticky. Forms a mat which helps stabilize coastal foredunes. (EB, MDO, MSSB)


Abronia umbellata
SAND VERBENA

Habitat: Sandy areas, old stabilized dunes.

Notes: Flowers are between pink and magenta. Leaves are thin and plants form a mat between the shrubs of maritime chaparral and dune scrub. (MBSP, MDO)

Onagraceae Evening Primrose family


Camissonia cheiranthifolia cheiranthifolia

BEACH EVENING PRIMROSE

Habitat: Sandy areas, coastal sand dunes.

Notes: An abundant and striking dune species. Forms a mat of gray-green leaves with bright yellow four-petaled flowers at the tips of each branch. As with all *Camissonia* spp., the stigma is ball shaped.(EB, MBSP, MDO, MSSB)

Camissonia micrantha
SUN CUP

Habitat: Sandy areas, coastal sand dunes.

Notes: Differs from *C. cheiranthifolia* by smaller, though similar, flowers and more elongated leaves. This plant grows from the center and projects itself outwards as it grows. The flowers are found at the tip of each projection. As the plant ages, the foliage begins to turn red. (LOOR, MBSP, MDO, MSSB)

Camissonia ovata
SUN CUP

Habitat: Grasslands, heavy clay soils.

Notes: The tip of the ovary (center of the flower) is slender; this species is the perennial bulb form of this genus. At full bloom, the petals appear to peel all the way back to show off its the flower parts. The leaves are large, wavy, and have hairy margins. (LOOR)


Clarkia purpurea quadrivulnera
FOUR-SPOT

Habitat: Grasslands, coastal scrub.

Notes: This species is commonly seen in grasslands around the Morro Bay estuary. Individuals found in our area do not exhibit the dark purple spot on each flower petal as it does elsewhere. The flower buds are erect, as is the plant. (LOOR, MBSP)


***Clarkia* spp.**

CLARKIA

Notes: Various species are found throughout the range of our parks, primarily in open areas. Flowers are pink to purple, usually with white petal bases. Petals are deciduous, revealing the capsule fruit. The petals of all species have a lobed or wavy apex. Anthers are attached at the base of the flowers and leaves are typically elongated.



Epilobium canum canum
CALIFORNIA FUSCHIA

Habitat: Chaparral, coastal scrub.

Notes: This striking plant can be found growing among coastal scrub. The deep red flowers resemble a typical ornamental fuschia. The thin stems are woody, and the narrow leaves are grey-green. The stigma protrudes beyond the petals and anthers when in bloom. Commonly seen in late summer. A dwarf population occurs at HC on compacted soils. (EB, MDO, HC, MBSP)


Oenothera elata hookeri
EVENING PRIMROSE

Habitat: Coastal sand dunes, roadsides.

Notes: This is a common species found in the dunes of MSSB. Flowers appear similar to *C. cheiranthifolia*, however, this plant is tall rather than sprawling. Another good characteristic is the four lobes on the stigma. (MDO, MSSB)

Orobanchaceae Broom-rape family


Orobanche fasciculata
CLUSTERED BROOM-RAPE

Habitat: In open sand as a root parasite, most often on *Artemisia* spp., *Eriodictyon* spp., and *Eriogonum* spp.

Notes: Identified by its branching nature and the dull pink-yellow flowers. The actual stem of the plant is thick and can extend far into the soil. (MBSP)


Oxalis albicans pilosa

OXALIS

Habitat: Coastal grassland, coastal scrub, chaparral.

Notes: Small yellow flowers and heart shaped leaflets. A perennial taproot, these are found in the grasslands at HC and also at LOOR. Exotic *Oxalis* spp. also occur in our area. Clover-like.

Paeoniaceae Peony family



Paeonia californica
PEONY

Habitat: Chaparral, coastal scrub, shady areas.

Notes: A unique species, peony can be easily identified by its randomly lobed leaves with a blue-green collar. The flowers are deep red, fleshy, and barely opening, and the petals and sepals flare open with maturity and fall off as the fruit develops. The fruit consists of three separate follicles. (LOOR, MBSP, MDO)

Papaveraceae Poppy family


Dendromecon rigida
BUSH POPPY

Habitat: Open slopes, burn sites.

Notes: This tall shrub is typically found only after a chaparral fire. As the chaparral matures through succession this species begins to decline in abundance. The flowers are yellow, poppy-like, and are readily seen when in full bloom. Petals drop off as the elongate fruit develops. Ultimately the fruit dries out and snaps open, thereby spreading seed. (MBSP, MDO)



Eschscholzia californica
CALIFORNIA POPPY

Habitat: Grasslands, coastal scrub, roadsides.

Notes: Our state flower. When in great abundance, this species can light up an area with brilliant orange colors. Petals slightly wavy, highly dissected leaves, and four petals. Coastal plants generally have yellow flowers with orange centers, as seen in the right photograph above. (All Park Units)


Meconella linearis

CARNIVAL POPPY

Habitat: Grasslands, chaparral, burned slopes.

Notes: Not commonly seen in our area, yet in 2005, after anomalous rains, this species was seen in Baywood fine sands in an opening near *Prunus fasciculata* at MBSP. Flowers are poppy-like and alternate with white and yellow petals.

Plantaginaceae Plantain family


Plantago erecta

PLANTAGO

Habitat: Various habitats, especially grassy open areas outside of thick brush.

Notes: A small annual plant common in grasslands in our area. Almost identical to *P. ovata* which is found in rocky areas. *P. erecta* is sparsely hairy, has bracts shorter than sepals, shiny seeds, and occurs in grasslands and woodlands. *P. ovata* has silky hairs, bracts more or less equal in length to sepals, seeds that are not shiny, and occurs in dry rocky areas. (MDO, MBSP, HC, EB)

Platanaceae Sycamore family


Platanus racemosa

WESTERN SYCAMORE

Habitat: Riparian areas, oak woodland.

Notes: This deciduous tree is easily identified by its smooth, almost white, trunk, its signature soft five-lobed palmate leaves, and fruits that are soft spiked spheres. Most habitats containing this species are considered sensitive due to increased destruction of riparian areas and mature woodlands. Leaves are susceptible to a pathogen that makes new leaves shrivel and die. (LOOR, MBSP, MDO)

Plumbaginaceae Leadwort family


Armeria maritima californica

SEA-PINK, THRIFT

Habitat: Exposed coastal bluffs, edges of coastal grasslands, and coastal sandy areas.

Notes: A clump-like annual with long narrow leaves. Has a terminal inflorescence of pink flowers. More common further north, but observed at HC.


Limonium californicum
SEA LAVENDER

Habitat: Salt marsh.

Notes: Commonly seen sprouting in and around the Morro Bay estuary. Large leaves are entire and have a wavy margin, sometimes turning reddish. Inflorescence is an open panicle of purple and white flowers. An exotic relative, *L. perezii*, looks similar and is commonly seen in landscaping. (MBSP)

Polemoniaceae Phlox family


Eriastrum densifolium densifolium
ERIASTRUM

Habitat: Locally found in coastal sand dunes.

Notes: Found growing low where the soil is very sandy and the vegetation is generally undisturbed and open. The unique blue flowers are obvious and showy. Grey-green leaves are small and elongate. Our particular subspecies has leaves that are not lobed and are sparsely hairy. (MBSP, MDO)


Navarretia squarrosa
SKUNKWEED

Habitat: Chaparral, open disturbed areas.

Notes: A small, low growing, weedy looking species. Aromatic, the smell is similar to a skunk, yet not as strong. The flower heads are harmless, yet look painful. Flowers are a deep to light purple-blue and the stamens do not protrude from the flower tube. Stems are sticky and leaves are reduced. (MDO)

Polygonaceae Buckwheat family


Chorizanthe angustifolia
SPINEFLOWER

Habitat: Sandy open areas.

Notes: This spine-flower is a common groundcover seen in sandy areas around Morro Bay. If you look close enough, you will see hooked spines on the ends of the involucres. Flowers are small, many appearing to be barely open. (LOOR, MBSP, MDO)


Eriogonum fasciculatum

CALIFORNIA BUCKWHEAT

Habitat: Coastal scrub, chaparral.

Notes: This buckwheat occurs in our area, but is likely introduced, via misguided restoration projects, at all locations except the backcountry of MDO. The leaves are linear, short, and rolled under. The flower head is composed of tiny pink to white flowers. (MBSP)

Eriogonum parvifolium

COASTAL BUCKWHEAT

Habitat: Sand dunes, sea bluffs, grassland, coastal scrub.

Notes: This buckwheat is easily distinguished by its short, triangular, and fleshy leaves. Leaves are green above and densely hairy and white below. The upper leaf surface sometimes turns reddish. The small white (or pink) flowers form a dense canopy or layer above the foliage. (All Park Units)

Mucronea californica

CALIFORNIA SPINEFLOWER

Status: 4/None/None

Habitat: Chaparral, coastal scrub, sandy areas.

Notes: A common groundcover found in the sandy substrates surrounding the estuary. If you look closely there are two to three flowers per involucre, separating this from the *Chorizanthe* spp. (LOOR, MBSP, MDO)


Polygonum paronychia

KNOTWEED, SMARTWEED

Habitat: Open areas in coastal dunes.

Notes: A prostrate perennial growing on dune faces near Hazard Canyon in MDO. Leaves are thick and flowers cluster in the upper leaf axils.


Pterostegia drymariodes

PTEROSTEGIA

Habitat: Shady moist environments.

Notes: A groundcover that seems to persist after the rainy season. The flowers are too small to observe with the naked eye, but the best distinguishing feature is the opposite, often red with green, heart-shaped leaves covering the ground. (EB, LOOR, MBSP, MDO)

Rumex salicifolia **var. *crassus***

WILLOW DOCK

Status: None

Habitat: Dunes, bluffs and marshes along the coast.

Notes: Perennial. Stem is prostrate. Both basal and cauline leaveas are present. Leaves are thick, shinny almost leathery, lanceolate to elliptic, and has an entire margin. Infloresence is a dense panicle of clustered pale pink- whitish -light green flowers and bracts. Near Hazard's Canyon along the coast. (MDO).

Portulacaceae Purslane family

Calandrinia ciliata
RED MAIDS

Habitat: Grasslands, sandy areas.

Notes: This annual wildflower is common in most years. The leaves are slightly fleshy and the small bright pink flowers are readily visible. (EB, LOOR, MBSP, MDO)

Claytonia perfoliata
MINER'S LETTUCE

Habitat: Oak woodlands, moist shaded areas in most habitats.

Notes: Miner's lettuce is a common understory component of oak woodlands. The perfoliate leaves are slightly fleshy and forms large disks from which the tiny flower stalks emerge. In addition, as the name implies, this species is edible as a green. (EB, HC, LOOR, MBSP, MDO)

Primulaceae Primrose family

***Dodecatheon* spp.**
SHOOTING STAR

Habitat: Grasslands.

Notes: A unique wildflower, the leaves form a basal rosette. The inflorescence is an open umbel with several nodding flowers per stem. The center of the flowers point downward and the pink petal tips point upward towards the sky. The stamens are fused around the stigma. (MBSP)

Ranunculaceae Buttercup family


Actaea rubra

BANEBERRY

Habitat: In our area, occurs in moist shaded woods and canyons.

Notes: Seen along the Coon Creek trail at MDO as part of the understory vegetation. This plant exhibits bright red shiny berries that are toxic. Inflorescence is a raceme and leaves are toothed.


Clematis ligusticifolia

VIRGIN'S BOWER

Habitat: Along creeks in riparian areas.

Notes: A common climbing woody vine along our coast. Usually hanging down from trees and shrubs along creeks. Many white flowers in clusters and a ball of feathery fuzzy seeds. Opposite compound leaves. Leaves and stems die back each year. (LOOR, MBSP, MDO)

Delphinium parryi
LARKSPUR

Habitat: Coastal scrub and chaparral.

Notes: A brilliant flower observed only once by the authors in MBSP. Leaves are highly lobed and flowers occur in racemes. The flower is composed of five purple-blue sepals and four petals. Two petals are deep blue while two may be deep blue to white. In addition, there is a straight and pronounced spur. (MBSP)

Ranunculus californicus
CALIFORNIA BUTTERCUP

Habitat: Grasslands, oak woodlands.

Notes: A common grassland wildflower. All parts of the flower are bright yellow. Many petals per flower as well as many stamens. The leaves are generally lobed and relegated to the base of the plant. (EB, LOOR, MBSP, MDO, HC)


Thalictrum fenderli
MEADOW RUE

Habitat: Riparian areas, moist shaded slopes.

Notes: The smell of crushed foliage is quite rank. Leaves are compound and lobed. The flowers are a large panicle of white to green sepals. Male and female flowers are on separate plants. Pictured here are the nodding male flowers with the anthers hanging down. (MDO)

Rhamnaceae Buckthorn family



Ceanothus cuneatus
BUCKBRUSH

Habitat: Coastal dune scrub, chaparral, rocky dry slopes.

Notes: This dominant evergreen component of our maritime chaparral has dense woody stems and can be difficult to walk through. In the winter, the ends of each branch are covered in small white-purple flowers that are fragrant. Leaves are thick, tough, oblanceolate, variably toothed margins, and three-branched veins visible from the undersurface. (LOOR, MBSP, MDO)


Ceanothus griseus
CARMEL CEANOTHUS

Habitat: Found locally in maritime chaparral or Bishop pine forests.

Notes: A common shrub in riparian areas of MDO. The leaves are evergreen and are much larger than, and not nearly as tough as, those of *C. cuneatus*. Dense clusters of deep blue flowers. More common in northern California.



Rhamnus californica californica

CALIFORNIA COFFEEBERRY

Habitat: Coastal scrub, chaparral, oak woodland, riparian areas.

Notes: Common in a variety of habitats found in our area. The veins of the leaves are clearly evident, especially the prominent midvein on the leaf underside. Entire leaf margins distinguish this from toyon (*Heteromeles arbutifolia*). The eye-catching berries are red when fresh, turning black when ripe. Our subspecies of coffeeberry has leaves that are dark green on top and yellow on the undersides. (LOOR, MBSP, MDO)

Rhamnus crocea
SPINY REDBERRY

Habitat: Coastal scrub, chaparral, oak woodlands.

Notes: This species is commonly mistaken for a *Ceanothus* sp. because of the rounded, thick, and reduced nature of the leaves. However, this species can be separated from *Ceanothus* sp. by the red berries which form after flowering and the singular midvein visible on the undersurface of the leaves. (LOOR, MBSP, MDO)

Rosaceae Rose family

Adenostoma fasciculatum
CHAMISE

Habitat: Chaparral, dry slopes.

Notes: A common plant found in chaparral. This species forms dense thickets that are almost impassible. The leaves are much reduced and clustered on the stem, forming fascicles. The white flowers form on the ends of the branches and are arranged in panicles. (LOOR, MBSP, MDO)

Fragaria vesca

WOOD STRAWBERRY

Habitat: Found in partially shaded moist sites.

Notes: Compound leaves with dentate to serrate margins. Spreads by creeping stems (stolons) which root at the nodes. Has white rose-like flowers. Found in Coon Cr. and Hazard Cyn. at MDO and on north facing slopes at HC.

Heteromeles arbutifolia

TOYON

Habitat: Chaparral, oak woodlands.

Notes: A striking tree when the bright red berries are mature. The leaves are leathery and the margins are sharply toothed. Varies in size form a shrub to a tree. (EB, LOOR, MBSP, MDO)

Holodiscus discolor
OCEANSPRAY

Habitat: Oak woodland, riparian zones.

Notes: This beautiful plant is a particular favorite of a few botanists in our county. Overall, this shrub is more or less hairy, the leaves are toothed, alternate, and the panicles of clustered white to cream-colored flowers hang down. (MDO)

Horkelia cuneata
HORKELIA

Habitat: Open areas in old sand dunes, coastal scrub, chaparral.

Notes: A common understory component of many habitats in our area. Forms a dense clump in open sand. The sticky compound leaves have a slight resin-like smell to them when crushed. (LOOR, MBSP, MDO)


Oemleria cerasiformis

OSO BERRY

Habitat: Partly shaded, relatively moist hilltops near coast.

Notes: Deciduous shrub with fragrant flowers. Leaves are lanceolate with a pronounced midvein. Entire leaves are typically rolled under along the margins and are paler below. Flowers of white to rose occur in racemes. (MDO-Bloody Nose Trail)


Potentilla anserina pacifica

CINQUEFOIL

Habitat: Edges of freshwater marshes, moist areas, coastal sand dune swales.

Notes: This species makes up much of the wetland vegetation between the back and fore dunes of MSSB. The flowers are bright yellow and are readily visible. (MBSP, MDO, MSSB)


Prunus fasciculata* var. *punctata
DUNE ALMOND

Status: 4/None/None

Habitat: Sandy areas, maritime chaparral, oak woodlands.

Notes: This deciduous species is common to creosote bush woodlands of the desert, yet in our area we have a coastal low growing variety. The stems are rigid and almost spine-like and the much reduced leaves are hairless and the margins are entire. This variety is limited in distribution. (MBSP, MDO)


Prunus ilicifolia ilicifolia
ISLAY BERRY

Habitat: Canyons, slopes, chaparral, ecotone between coastal scrub and oak woodland.

Notes: The leaves are distinct with a shiny green color and have wavy serrated margins with sharp teeth. The plant can be a dense shrub or a small tree. Produces red berries. (LOOR, MDO)

Rosa californica
CALIFORNIA ROSE

Habitat: Moist areas, oak woodlands.

Notes: Our native rose. Forms a thicket and the stems contain spines that are strongly curved. Leaflets have serrated margins. This species can be found in most oak woodlands and riparian areas as an understory component. (LOOR, MBSP, MDO, HC)

Rubus parviflorus
THIMBLEBERRY

Habitat: Riparian areas, moist slopes.

Notes: This species has an erect stature, soft palmately lobed leaves, white flowers, and pink fruits. The fruit is similar to raspberries except they are more puberulent (hairy). (MDO)


Rubus ursinus

CALIFORNIA BLACKBERRY

Habitat: Riparian areas, seeps, shrublands, oak woodlands.

Notes: A common thicket-forming plant found in riparian areas and other moist places. To distinguish this species from poison oak (both have leaves of three) look for prickles on the stem. Has tough serrated leaves and edible dark fruits. Male and female flowers are on the same plant. (EB, LOOR, MBSP, MDO, HC)

Rubiaceae Madder family


Galium andrewsii andrewsii

PHLOX-LEAVED BEDSTRAW

Habitat: Locally most visible in the open sandy soils of coastal dune scrub. Also found in chaparral.

Notes: A common, low, matted perennial appearing like a clump of moss when not in flower. Bristle-like leaves are in whorls. (MDO, MBSP, LOOR)


Galium aparine

BEDSTRAW, GOOSE-GRASS

Habitat: Grassy, shaded areas.

Notes: Six to eight leaves per whorl. A common annual with hooked prickles that cause the plant to stick to clothes. Climbing or prostrate. The elongate lanceolate leaves lack petioles on the upper leaves. The nativity of this plant to California is debated, and the Jepson manual, which lists this as a native plant, states, "perhaps native to Europe." (MDO, MBSP, LOOR)


Galium porrigens

CLIMBING BEDSTRAW

Habitat: Among shrubs in chaparral and forest.

Notes: Four leaves per whorl. A climbing perennial also with tiny hooked prickles causing it to stick to clothes. Leaves are smaller than *G. aparine*. (MDO, MBSP, LOOR)


Populus balsamifera trichocarpa

BLACK COTTONWOOD

Habitat: Riparian areas.

Notes: The deciduous leaves have finely serrated margins and the overall leaf shape is generally round to oval. (EB, LOOR, MBSP, MDO)


Populus fremontii fremontii
FREMONT COTTONWOOD

Habitat: Riparian areas, dune swales.

Notes: In contrast to *P. balsamifera*, the deciduous leaves of this species are more or less triangular and the margins are coarsely serrated. Scattered individuals commonly occur in our area in many drainages and riparian areas. (EB, LOOR, MBSP, MDO, MSSB)

Salix lasiolepis
ARROYO WILLOW

Habitat: Riparian areas.

Notes: This is the most common species found lining creeks and riparian zones in our area. The long slender leaves are green on the upper surface and white to light green on the bottom. (EB, LOOR, MBSP, MDO, MSSB)

Saururaceae Lizard's Tail family

Anemopsis californica

YERBA MANSA

Habitat: Permanently moist areas in brackish, saline, or alkaline soil, often at seeps or springs.

Notes: Uncommon locally, seen at the Audubon Sweet Springs Preserve in Los Osos. Grows basal leaves from a rhizome and has white petal-like bracts.

Saxifragacea Saxifrage family


Heuchera pilosissima

HEUCHERA

Habitat: Moist shaded rocky areas of the fog-dampened coast.

Notes: A low growing plant with lobed leaves. Flowers are small and radial with pinkish sepals and whitish petals. Seen locally only at inaccessible areas on Morro Rock.

Scrophulariaceae Figwort family


Antirrhinum multiflorum
SNAPDRAGON

Habitat: Rocky outcrops, disturbed areas.

Notes: Seen in MDO on the rocky shale outcrops near Islay Creek. This perennial (sometimes annual) has unequal calyx lobes and pale pink flowers that wither on the lower lip. As with many flowers in this family, the flower has two lobed lips. Leaves are alternate. Overall, this plant is quite sticky and hairy.

Antirrhinum nuttallianum subsessile
SNAPDRAGON

Habitat: Coastal dunes and rocky outcrops. Locally rare on volcanic rocks near the coast.

Notes: This plant has been observed only at White's Point in MBSP, just as Hoover documented in 1970. The plant is sticky all over and the small, lavender-blue flowers are striking. (MBSP)

Castilleja affinis affinis
INDIAN PAINTBRUSH

Habitat: Chaparral and coastal scrub, often on rocky soils.

Notes: This colorful perennial root parasite can be found on the roadsides of MDO. Because of its soft pubescent nature and beautiful colors, this species aptly gets the name "Indian paintbrush." Long leaves and red colored lobed bracts. This is the most common species of paintbrush in our area. (MBSP, MDO)


Castilleja densiflora obispoensis

SAN LUIS OBISPO PAINTBRUSH

Status: 1B/None/None

Habitat: Grasslands.

Notes: This partial root parasite is a subspecies of *C. densiflora* that is endemic to the native grasslands around the San Luis Obispo area. The annual SLO paintbrush has white tipped bracts and yellow tipped corollas. Most often occurring in open patches of grasslands. (EB, MBSP, HC)


Castilleja exserta exserta

PURPLE OWL'S CLOVER

Habitat: Grasslands and coastal scrub.

Notes: Probably the most showy of all the Indian paintbrushes. An annual partial root parasite with thin lobed leaves and bracts that are pink-purple with yellow-white tips. This species can be single stemmed or found with many branches. (LOOR, MBSP, MDO)


Castilleja foliolosa

WOOLLY INDIAN PAINTBRUSH

Habitat: Rocky outcrops, chaparral.

Notes: Another partial root parasite with lobed leaves. Very pubescent. In our area, this plant has only been found on Park Ridge in MBSP. This species is commonly colored orange-red, however, the coastal conditions are thought to cause the bright yellow coloration in our local population.


Collinsia heterophylla

CHINESE HOUSES

Habitat: Diverse habitats including open areas in Baywood fine sand coastal scrub.

Notes: A common wildflower of Morro Bay State Park. The unique flowers are mostly white with a purple-tinged lower petal whorled around the stem. Opposite leaves are toothed.

Cordylanthus maritimus maritimus

SALT MARSH BIRD'S-BEAK

Status: 1B/SE/FE

Habitat: Coastal salt marshes.

Notes: This rare species, according to Hoover, was once found all over the shores of Morro Bay. Today, it has been found only in small patches on the Sandspit, Audubon Sweet Springs Preserve, and Shark's Inlet. In 2005 a survey found only four populations. This plant is similar to a paintbrush, except the tip of the flower beak is closed. Leaves and bracts may be hairy and are often coated with salt. (MDO)

Linaria canadensis
BLUE TOAD-FLAX

Habitat: Diverse habitats.

Notes: After the anomalous rains of 2005, this species was commonly seen in many areas. This small annual has multiple small, violet-blue flowers each containing a strongly curved spur on the back. Leaves are typically narrow. Flowers are purple, spurred, and in racemes with prominent veins in the petals. Not nearly as tall and robust as *Delphinium* spp. (Larkspur). (EB, LOOR, MBSP, MDO)

Mimulus aurantiacus

STICKY MONKEYFLOWER

Habitat: Rocky outcrops, coastal scrub, chaparral.

Notes: A very common shrub found in the surrounding hills. The plant is sticky throughout, including the flowers. Has a woody stem and leaves with a prominent midvein. Touch the stamens of any *Mimulus* sp. to see it close in response to an assumed pollination. (All Park Units)

Mimulus cardinalis

SCARLET MONKEYFLOWER

Habitat: Riparian areas, stream banks, seeps.

Notes: A small perennial which has only been seen locally in the flood plain of Chorro Creek near Lower State Park Rd and South Bay Blvd. The flower is red and resembles a typical monkeyflower. The leaves have three to five palmate veins and are hairy, with the upper leaves tending to clasp. (MBSP)



Mimulus guttatus
MONKEYFLOWER

Habitat: Moist areas, rocky outcrops.

Notes: This annual is usually seen when there is consistent moisture. The flowers are bright yellow and have red spots inside the throat. Leaves are oval, often with lobed bases, crenate margins, and are reduced above. Bracts are fused around the stem. (MBSP, MDO)


Scrophularia californica californica
FIGWORT

Habitat: Riparian areas, coastal scrub, chaparral, roadsides.

Notes: This plant is easily distinguished by its flower. Flower is in a long open panicle and has a lower lip reduced and two large equal lobes on the upper lip. The plant is erect and rarely exhibits intricate branching. The triangular leaves are opposite each other and have dentate margins. (EB, MBSP, MDO)

Solanaceae Nightshade family

Solanum douglasii
NIGHTSHADE

Habitat: Coastal scrub, chaparral, back-dunes, oak woodlands.

Notes: This native member of the potato family can be found in most habitats in our area. It is recognized by its star-shaped white flowers. The white petals form a slight ring around yellow stamens which are fused around the ovary. Leaves are lobed, alternate, and toothed, and have a slight fold down the middle. (All Park Units)

Solanum xanti

PURPLE NIGHTSHADE

Habitat: Oak woodland, coastal scrub, chaparral.

Notes: Purple nightshade is very easy to identify due to its petals fused around the stamens and ovary. The flowers can be dark blue to lavender. The leaves are simple and are softly pubescent. (LOOR, MBSP, MDO, MSSB)

Urticacea Nettle family


Urtica dioica* ssp. *holosericea

HOARY NETTLE

Habitat: Common along streams and wet areas.

Notes: This plant is familiar to anyone who has brushed against the herbage and been stung by the stinging hairs containing formic acid. Grows from rhizomes and has toothed opposite leaves. (MDO, MBSP, HC, LOOR)

Verbenaceae Vervain family


Phyla nodiflora

PHYLA

Habitat: Wet areas.

Notes: The flowers are white to reddish on a rounded spike inflorescence. Leaves have short hairs and serrated margins. A low-growing plant. Near the Villa Creek lagoon at EB and other wetlands.


Verbena lasiostachys* var. *lasiostachys
VERVAIN

Habitat: Open, dry, or moist areas.

Notes: Resembling a plantain, this plant is soft hairy overall with an elongated stalk of small blue to lavender flowers. Leaves are toothed. Commonly seen spread out in open patches of grassland and coastal scrub. (MBSP, MDO)

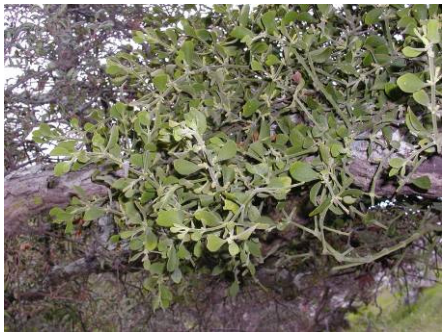
Violaceae Violet family


Viola pedunculata
JOHNNY JUMP-UPS

Habitat: Locally found in grasslands.

Notes: A very common wildflower seen emerging in the early spring. Can form dense patches as a low-growing annual. This species has unequally lobed yellow bilateral flowers with brown streaking in the inner portion. Leaves are oval to heart shaped. (EB, LOOR, MBSP, MDO)

Viscaceae Mistletoe family



***Phoradendron* spp.**

MISTLETOE

Habitat: Parasitic on woody dicots, including trees.

Notes: This plant has thick fleshy leaves and green woody stems. Separate male and female flowers. More than one species may occur in our area. This plant is presented here as a representative of the various mistletoes.

Cyperaceae Sedge family

This family can be characterized by the following traits; annual to perennial, generally spreading by rhizomes, generally monecious (separate male and female flowers on the same plant), fibrous, hairy roots, stems that are 3-sided, 3-ranked, parallel veined leaves, and an inflorescence that is in spikelets. They are often found in moist, open areas, and often form clumps. In our area the Cyperaceae is most commonly represented by four genera: *Carex*, *Cyperus*, *Eleocharis*, and *Scirpus*.

CAREX **SPECIES - Sedges**

Carex species have rhizomes and are typically perennial. They are typically grass-like and bunching with leaves that are 3-ranked and ribbed. The inflorescense is generally moneocious (separate male and female flowers on same plant) and sub-tended by a bract. The pistillate (female) flowers are enclosed by a perigynum (scale-like bract). Fruits are achenes (grain-like). According to the Jepson manual, many species of *Carex* are effective at "knitting" the soil together. In California, there are at least 131 native species of *Carex*.


Carex praegracilis

SEDGE

Habitat: Coastal dune swales, fresh and salt water marshes

Notes: This slender sedge is common in the Estero Bay area. Spreading by rhizome, it often forms dense mats that blanket the ground. Leaf is prominently ridges down the center and appears slightly folded. (MDO, MBSP, LOOR)

***CYPERUS* SPECIES - Nutsedges**

Cyperus species can be either annual or perennial. They are typically erect and 3-angled, although some species are more rounded. In the species that have visible leaves, the leaves are basal and linear. They have bisexual flowers that are arranged in spikelets. The ovoid fruit is typically 3-angled and without a beak. They are also most commonly associated with moist places where water is readily available, such as the local coastal dune swales and salt marshes. There are 11 native species of *Cyperus* in California.

ELEOCHARIS SPECIES - Spike-rushes

Species in this genus may be either annual or perennial. The stems may be rounded to angled, grooved, ridged, or solid. The flowers are arranged in a single spikelet found at the terminal end of the stem. *Eleocharis* species are most commonly found in fresh water marshes and rocky areas in riparian zones and often form small clumps. There are 14 native species of *Eleocharis* in California.

SCIRPUS SPECIES - Bulrushes

Scirpus species may be annual or perennial, are bunching, and appear grass-like or rush-like. The fibrous roots may form rhizomes, allowing some species to spread vegetatively. The stems are most commonly 3-angled but may be cylindrical. Leaf blades range from linear to scale-like. The bisexual flowers can be arranged into a panicle or a head-like structure. The fruit is an achene, appearing grain-like. Some species of *Scirpus* are mistakenly identified as species of *Eleocharis*. There are 20 native species of *Scirpus* in California. They are most commonly associated with wet areas, especially fresh and brackish water springs and drainages.

Scirpus acutus* var. *occidentalis

RUSH, TULE

Habitat: Moist areas such as wetlands, marshes, ponds, lake edges and stream banks.

Notes: Perennial reaching up to 4 m in height. This *Scirpus* spreads by rhizomes, often forming large stands. Stems are very tall, rigid and cylindrical and have a sharply pointed tip. The inflorescence is panicle-like. (MSSB, EB, HC)

Scirpus americanus

AMERICAN THREE-SQUARE

Habitat: Coastal dune swales and salt marshes.

Notes: A tall perennial, reaching 220 cm in height. This *Scirpus* has 3-angled stems that stand erect, but sometimes arch. The sides of the stems are deeply concaved. The spikelets form a head-like inflorescence. (MSSB, EB, HC)


Scirpus microcarpus

SMALL-HEADED BULRUSH

Habitat: Marshes, meadows, banks of streams and ponds.

Notes: This species is common in wet locations such as the Audubon Sweet Springs Preserve and along the water's edge in many of the canyons in MDO. This is a stand forming plant and the individuals spread by long rhizomes. The stems are erect and 3-angled. The long, strap-shaped linear leaves have finely serrated margins that can easily slice through the skin, leaving one with an uncomfortable "paper-cut." The flower spikelets form panicles or head-like clusters and the fruit is 2-angled. (LOOR, MDO)

Scirpus pungens

COMMON THREE-SQUARE

Habitat: Coastal dune swales and salt marshes.

Notes: This species of *Scripus* is one of the most common in the Estero Bay area. It can be found at all park units in the area as well as at the Audubon Sweet Springs Preserve. It spreads by long rhizomes, often forming a blanket. Stems are erect and 3-angled. Flowers are arranged in spikelets and are head-like. This species is very similar to *Scirpus americanus*, differentiated by length of leaf sheath and the degree to which the stems are concaved. (MSSB, EB, HC)

Iridaceae Iris family


Iris douglasiana
IRIS

Habitat: Grasslands, coastal scrub, shaded canyons and chaparral near the coast.

Notes: This flower is found along trails in canyons of MDO. The flowers are deep lavender, with petals and sepals each forming a whorl of 3. The leaves are long and slender arising from rhizomes, not bulbs. Leaves are equitant, meaning two leaves are fused together to form what appears to be a single leaf.


Sisyrinchium bellum
BLUE-EYED GRASS

Habitat: Grasslands, open areas in oak woodlands, especially in moist soils.

Notes: The grassy looking nature of this plant combined with its deep purple flowers is the basis for its common name. In years of good rain, grasslands near the coast explode with the purple from this flower. In dense patches, white mutants can also be seen. Leaves are equitant (two fused into one). (EB, LOOR, MBSP, MDO)

Juncaceae Rush family

This family can be characterized by several traits. They are annuals and perennials, spread by rhizomes, and are often clumped. While the stems are most commonly rounded, they may be flat in a few species. The flowers are in head-like clusters or single and in a variety of arrangements. The radial flowers are bisexual with a superior ovary. The fruits are capsules and have many seeds. Representatives of two genera, *Juncus* and *Lazula*, are found in our area.

JUNCUS **SPECIES - Rushes**

The species in the genus *Juncus* are annual to perennial and have rhizomes. They most commonly have rounded stems, although a few species have flat stems. Cross walls are found in the leaves and range from cylindric to flattened. The inflorescence is typically terminal but may appear lateral (from the side) in some cases. *Juncus* species are associated with moist areas, typically emergent wetlands, freshwater seeps and springs, and the edges of calm watercourses where the soil remains moist. They tend to form clumps, and sometimes are found in large stands. There are 52 species of *Juncus* native to California.



Juncus acutus leopoldii

SPINY BULRUSH

Status: 4/None/None

Habitat: Coastal dune swales and salt marshes, brackish water areas.

Notes: This large and tufted species can be seen on the fringes of the estuary as well as in the swales between the back and fore dunes of MSSB. The spiny tips of the slender, stout, cylindrical leaves can be dangerous to the eyes. (MBSP, MDO, MSSB)



Juncus phaeocephalus

BROWN-HEADED RUSH

Habitat: Freshwater swales and other moist areas.

Notes: Perennial. Spreads by thick rhizome, forming dense patches. Stem and leaves are flat and the leaves overlap. Flowers are arranged in clusters; may be one to many clusters depending on the individual. Fairly widespread. *Juncus phaeocephalus* var. *phaeocephalus* is found at EB. (HC, MSSB)


Juncus patens

SPREADING RUSH

Habitat: Found in wet and marshy areas or where underground water persists.

Notes: Perennial with thick branching rhizomes. Often found in large clumps or stands but also as lone individuals. The bluish-green stem is rounded, but distinctly grooved when fresh. The highly reduced leaves are basal and have brown sheaths. Flower clusters appear lateral. (All park units)

***LUZULA* SPECIES – Hairy Wood Rushes**

Perennial species, with a short rhizome and a rounded stem. Leaves are mostly basal and have long soft hairs running along the margin. The separate flowers are arranged in panicles or head-like clusters. Elliptic seeds often have a distinct ridge. There are 6 *Luzula* species native to California. Grows in moist areas. Locally, a single species, *Luzula comosa* , can be seen at Cerro Cabrillo in MBSP and EB. Photo: Charles Webber, Berkeley Digital Library Photo Collection.

Juncaginaceae Arrow-Grass Family

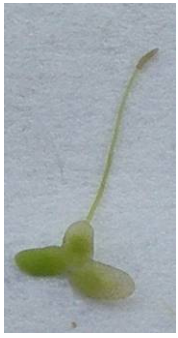


Triglochin concinna
ARROW-GRASS

Habitat: Salt marsh, alkaline areas, mudflats.

Notes: A small grass-like plant growing among the other salt marsh plants. Abundant where it occurs, this perennial is only visible when the herbage rises in the spring. The fleshy leaves might be mistaken for grass shoots growing among the salt marsh plants. (EB, MSSB, MBSP, MDO)

Lemnaceae-Duckweed Family


***Lemna* spp.**

DUCKWEED

Habitat: Grows on the surface of calm fresh water.

Notes: This aquatic plant is found in clusters, sometimes blanketing the surface of the water. There is no stem, but rather, a small (2-5 mm) flat plant body. The root is single, the leaves are pale to dark green, often with visible reddish colored veins. There are 7 species native to California. (All park units)

Liliaceae Lily family


Bloomeria crocea
COMMON GOLDENSTAR

Habitat: Grassland and oak woodlands.

Notes: A striking wildflower seen in grasslands. The petals are bright golden yellow with a brown stripe down the middle of each one. The plant usually has a single basal linear leaf and an umbel-like inflorescence. Grows from a corm and has a capsule fruit (seed pod). (MBSP, MDO)


Calochortus clavatus clavatus
CLUB-HAIRED MARIPOSA LILY

Status: 4/None/None

Habitat: Rocky outcrops, chaparral, commonly found on serpentine.

Notes: This lily can be found on Black Hill in MBSP. This golden yellow flower has three styles, is quite large, and is seen atop a zigzag stem and basal leaves growing from a bulblet. The inside of the flower has small hairs surrounding a nectary and deep purple anthers.

Chlorogalum pomeridianum
SOAP PLANT

Habitat: Grasslands, coastal scrub, chaparral, coastal bluffs.

Notes: This plant can be recognized by its long wavy margined leaves and fibrous coarse bulb. The white flowers only open in the evening and usually close again by morning. Inflorescence is a panicle. The bulb can be used as lather, hence the name soap plant. (EB, MBSP, MDO)

Dichelostemma capitatum capitatum
BLUE-DICKS

Habitat: Grasslands, coastal scrub, chaparral, oak woodlands.

Notes: An abundant species seen in the spring. A single stalk of bell shaped purple flowers in an umbel-like inflorescence radiating from a single point. In addition, this species usually has 2-3 long linear basal leaves emanating from the below-ground corm. (EB, LOOR, MBSP, MDO)

Fritillaria biflora
CHOCOLATE LILY

Habitat: Grasslands, rocky outcrops.

Notes: The plant arises from a bulb and as it begins to flower the stem begins to curve downwards. The chocolate brown (sometimes greenish purple) flowers are nodding and hang down like bells. Linear leaves are alternate to whorled. (MBSP, MDO)

Smilacina racemosa

FALSE SOLOMON'S SEAL

Habitat: Riparian areas, moist slopes, oak woodlands.

Notes: This species can be seen lining Coon Creek Trail in MDO. The leaves are large and thick and they alternate up the stem. The flowers are white and very small and are in a panicle. Grows from rhizomes and produces fruits that are round, red, and dotted. (LOOR, MDO)

Trillium angustipetalum
WAKEROBIN

Habitat: Locally in moist deeply shaded canyons.

Notes: Found lining Coon Creek Trail in MDO. An interesting looking species, there are three dark spotted leaves. The petals are purple and slender. This population in MDO is the only population in our immediate area and appears related to populations in the Sierra Nevada rather than populations found north of here.



Zigadenus fremontii
DEATH CAMAS

Habitat: Grasslands, rocky outcrops, oak woodlands

Notes: The name "Death Camas" was derived for this genus by its original discoverers, the Lewis and Clark expedition. They ingested the bulbs and became quite ill. This species has small white flowers that are arranged in a raceme. If the stamens are shorter than the petals, then it is *Z. fremontii.* However, if the two structures are equal then it is the less common species *Z. micranthus* var. *fontanus,* also known to be in our area. Leaves are long and linear, fruit is a capsule, and it grows from a bulb. (MBSP, MDO)

Poaceae Grass family

While this is a very diverse family and the genera and species are rather difficult to key out, they can all be characterized by several features. They are annual to perennial, however, native grasses are typically perennial bunch grasses, while non-native grass species are annuals. The roots are generally fibrous, although some species spread through rhizomes or stolons. The rounded stems are typically hollow and swollen at the nodes (sometimes referred to as joints). The leaves are most commonly linear and sheathed around the stem. The inflorescence may be arranged in various ways but is always composed of spikelets. The spikelets are made up of florets and each floret has a lemma and a palea (two sheaths around the upper and lower surfaces of the floret). The flowers are typically bisexual, wind pollinated, and the fruit is grain-like (an achene). The following species are scattered in our area in remnant native grasslands, often intermixing with each other and with invasive non-native grasses.



Bromus carinatus

CALIFORNIA BROME

Habitat: Open shrublands, woodlands and grasslands

Notes: A rather tall native grass, it can reach 1.5 m in height. This grass has a spreading or "nodding head" of compressed or flattened spikelets. Inflorescence in whorls. Thought to be self-pollinating. *Bromus carinatus* var. *maritimus* is found at EB. (HC, MBSP, LOOR)


Danthonia californica

CALIFORNIA OAT GRASS

Habitat: Moist, open grasslands.

Notes: A perennial bunch grass. Typically only three spikelets per stalk, they are compressed and spreading and typically only three per stalk. (HC)


Distichlis spicata

SALT GRASS

Habitat: Dunes, alkali flats, salt marshes, sometimes disturbed coastal areas.

Notes: This low-growing perennial grass spreads rapidly by rhizomes and stolons. Yellowish-green in color, it has erect stems and stiff leaves. Flowers are typically dioecious. Spikelets are panicle-like in arrangement and are straw to purplish in color. Tolerant of alkaline conditions, this plant has salt-excretion glands. (All Park Units)

Koeleria macrantha

JUNEGRASS

Habitat: Dry open sites with poor soils with sand or rock.

Notes: A perennial bunch grass. The cylindric inflorescence is composed of many tan to purplish colored shiny spikletes. The branches and axis of inflorescences are hairy. (MDO-Shark's Inlet area, LOOR)



Leymus condensatus

GIANT WILD-RYE

Habitat: Coastal scrub, dry slopes, open woodlands, roadsides.

Notes: This is the largest, most conspicuous grass in our area. A tuft-forming, or clumping, grass which can grow to be very tall - more than head high. Old growth may have a blue or gray tinge. The stems lack hairs and the leaf blades are long and wide. The spikelet or flowers are arraigned in a panicle-like inflorescence. Sometimes confused with the invasive pampass grass, which is more bunching with stems obscured and a much larger inflorescence. (All Park Units)



Leymus mollis mollis

DUNE GRASS

Habitat: Coastal dunes and sandy beaches.

Notes: A tall stout grass spreading by rhizomes. Generally hairy just below the inflorescence. The wide leaf blades have a bluish-gray color and can have small stiff hairs. Flowers are arranged into flat, hairy spikelets. This native dune grass occurs along the length of the Pacific coast and can be found on the Aleutian Islands. Locally, it has been displaced by *Ammophila arenaria* (European beach grass) at MSSB, but has persisted and is widespread on the sandspit of MDO. Often confused with *A. arenaria*, however, *L. mollis* does not form solid stands, but occurs as open patches. (MDO, MSSB)


Leymus triticoides

CREEPING WILD-RYE

Habitat: Moist grasslands, near riparian areas, and sometimes in saline soils.

Notes: Perennial and spreading by rhizomes. Leaves are long and narrow and the leaf surface has fine small stiff hairs. Infloresence is tall and slender. (HC, EB, MDO)

Nasella pulchra

PURPLE NEEDLE GRASS

Habitat: Grasslands, oak woodlands, chaparral, sea-bluffs, serpentine and other rocky outcrops, and road cuts.

Notes: The most common perennial bunch grass in our area. Purple needle-grass can best be identified by its purplish colored spikletes and long, slender awns. (All Park Units)

Typhaceae Cattail family

Typha latifolia

BROAD-LEAVED CATTAIL

Habitat: Common in marshes, ponds, and lakes near coast, less common inland.

Notes: Perrenial with a tough spreading rhizome. Conspicuous flowers consist of separate sections of male and female flowers. An obvious tall plant in our wet areas. More inland, one may encounter the southern cattail, *Typha domingensis*, in canyons. (All park units)

Zosteraceae Eelgrass family

***Phyllospadix* spp.**

SURF GRASS

Habitat: Surf zone and rocky shores just below low tide line.

Notes: A dioecious plant from rhizomes that is visible as long folded or cylindrical leaves. Two species occur along the central coast: *P. scouleri* and *P. torreyi*. *P. torreyi* is more common in our area, occurring on rocks in the surf or in tide pools; can be distinguished from *P. scouleri* by narrower and much longer leaves. (MDO, EB, HC)

***Zostera* spp.**

EEL-GRASS

Habitat: Sheltered bays, shallow waters, and estuaries below low tide line.

Notes: A monoecious plant from rhizomes with long flat leaves. Two species occur along the central coast: *Z. marina* and *Z. pacifica*. This plant is an important forage for migrating Brandt geese visiting the Morro Bay estuary. Primarily found in the estuary on mud flats.

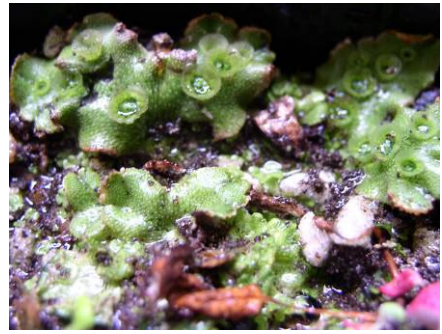
other plant-like organisms

Mosses and Liverworts

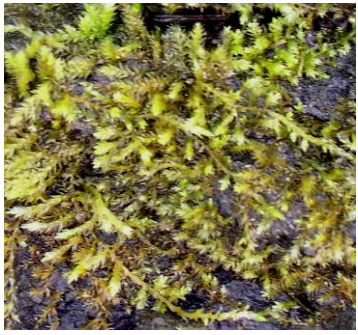
Neither a fern nor an angiosperm, mosses and liverworts are photosynthetic organisms that reproduce sexually via spores, as well as asexually through specialized structures. Typically, the leaf-like structures represent the gametophyte or haploid generation of the individual, while the stalked structures represent the sporophyte, or diploid generation, capable of sexual reproduction.

Liverworts have umbrella-like structures arising from the flat green structures called sporangiophores; they bear the spores that will germinate and develop into new individuals. Liverworts also produce gemma-cups which house gemma (asexual "packets"). When rain drops fall into these cups, they disperse the gemma, which land onto a surface, and if all of the environmental variables necessary for germination are available, they will develope into new individuals. These new asexual individuals are clones of the "parent" liverwort.

Liverworts



Mosses



The lower far right photograph shows shows the stalked sporangiophores seen as brown heads on the ends of thin grass-like structures. The green scale-like structure that we relate to the vegetative stage is actually the haploid generation.

Algae

Algae are non-vascularized photosynthetic organisms. They contain chlorophyll a and b, carotenoids, xanthophylls, and other accessory compounds which allow them to photosynthesize. There are 3 main groups of algae: Chlorophyta (green algae), Phaeophyta (brown algae or "true kelps"), and Rhodophyta (red algae). There are both freshwater and marine algae, including the "seaweeds." Unlike plants, algae lack flowers and reproduce by spores.





Lichens

Lichens are a symbiotic relationship between a fungus and algae and are known to be one of the slowest growing organisms. Lichens are found on a variety of substrates. In general, the chlorophyll in the algae photosynthesizes and produces the food energy while the fungus is responsible for attachment to the host as well as holding moisture and providing protection from the environment. While all require suitable substrate, most lichens require host species and some are host specific. Most spread by vegetative fragmentation.

Lichens play important ecological roles. They are responsible for primary succession and can form seed-beds for mosses, ferns, and angiosperms. Lichens also play an important role in nitrogen fixation and they provide nesting/burrowing materials for many bird species and small mammals, forage for herbivores, and in some cases, they can stabilize soils. The following are examples of the three basic types of lichen groups: crustose (crust-like), foliolose (leaf-like), and fruticose (pendulous or shrubby).

Crustose (encrusting lichens)


Buellia sp.


Candelaria sp.


Caloplaca sp.


Acarospora sp.

Fruticose (shrub-like or pendant-like)


Teloschistes sp.


Cladonia sp.


Heterodermia sp.


Usnea sp.

Foliolose (leaf-like)


Parmotrema sp.


Umbilicaria sp.


Melanelia sp.


Hypogymnia sp.

Fungi

Fungi are also non-vascularized organisms, and they reproduce by spores. Fungi do not use photosynthesis to produce food. Cell walls are composed of chiton rather than cellulose, as in plants. The main fungal body is called hyphae, which is typically an underground thin film of growth. The recognizable above ground "mushrooms" are the reproductive visible portion of the fungi. Fungi play an important role in decomposition of detritus and other leaf litter.

tables

Rushes and Sedges Found in the Estero Bay Area

(Surveys have not yet been conducted at MDO and MBSP)

Cyperaceae	**HC**	**EB**	**MSSB**	**LOOR**
Carex globosa	x		x	
Carex obnupta	x		x	
Carex subfusca	x		x	
Cyperus eragrostis	x	x	x	
Cyperus involucrata	x			
Eleocharis acicularis	x		x	
Eleocharis macrostachya	x	x	x	
Scirpus robustus		x		

Juncaceae	**HC**	**EB**	**MSSB**	**LOOR**
Juncus balticus	x		x	
Juncus effusus	x		x	
Juncus effusus var. *brunneus*				x
Juncus lesueurii				
Juncus occidentalis	x		x	
Luzula comosa		x		

Non-Covered Grasses of the Estero Bay Area

Poaceae	**HC**	**EB**	**MSSB**	**MBSP**	**LOOR**	**MDO**
Agrostris exarata	x					
Elymus glaucus	x		x			
Glyceria occidentalis		x				
Hordeum brachyantherum californicum		x				
Nassella lepida	x				x	
Paspalum distichum	x		x			
Phalaris californica	x					
Poa diabloensis (CNPS 1B)						x
Vulpia microstachys	x				x	

Non-Covered Dicots of the Estero Bay Area

Missing Plants	HC	EB	MSSB	LOOR	MBSP	MDO
Anaphalis margaritaceae			x			
Apiastrum multicaula					x	
Arbutus menziesii						x
Baccharis salicifolia	x					
Calystegia densiflora densiflora	x					
Calystegia occidentalis occidentalis	x					
Camissonia strigulosa				x	x	
Centarium davyi	x					
Conyza canadensis		x				
Cryptantha clevelandii				x		
Eucrypta chrysanthemifolia				x	x	
Euphorbia peplus	x					
Geranium bicknellii				x		
Horkelia californica	x					
Lepidium oblongum var. *insulare*		x				
Microseris bigelovii		x				
Microseris douglasii		x				
Pectocarya sp.					x	
Plantago ovata		x			x	x
Platystemma californica					x	
Potentia glandulosa	x				x	
Rhamnus ilicifolia	x					
Rorippa nasturtium-aquaticum	x					
Sagina decumbens occidentalis		x				
Salix laevigata			x		x	
Salix lutea						x
Stachys albens	x					
Stachys pycnantha	x	x				
Trifolium gracilentum var. *gracilentum*		x				
Uropappus lindleyi				x		

Also omitted are the fresh-water flowering plants.

index

A

Abronia
latifolia, 101
maritima, 101
umbellata, 102
Acer negundo* var. *californicum, 40
Aceraceae, 40
Achillea millefolium, 42
Actaea rubra, 117
Adenostoma fasciculatum, 121
Adiantum jordanii, 36
Adiatum aleuticum, 35
ADOBE SANICLE. *See Sanicula maritima*
Algae, 164
ALKALI-MALLOW. *See* Malvella leprosa
Alkaline Coastal Dune Wetland, 28
Ambrosia chamissonis, 43
AMERICAN DOGWOOD. *See* Cornus sericea
AMERICAN THREE-SQUARE. *See* Scirpus americanus
Amsinckia spectabilis, 61
Anacardiaceae, 40
Ancient Dunes, 14
Anemopsis californica, 130
Antirrhinum multiflorum, 131
Antirrhinum nuttallianum subsessile, 132
Apiaceae, 41
Arctostaphylos
morroensis, 77
osoensis, 78
Armeria maritima californica, 110
ARROW-GRASS. *See* Triglochin concinna
ARROYO LUPINE. *See* Lupinus succulentus
ARROYO WILLOW. *See* Salix lasiolepis
Artemesia dracunculus, 44
Artemisia
californica, 43
douglasiana, 44
ASTER. *See* Aster chilensis
Aster chilensis, 45
Asteraceae, 42
Astragalus nuttallii* var. *nuttallii, 80
Atriplex
triangularis, 69
Atriplex californica, 68
Atriplex leucophylla, 68
Atriplex watsonii, 69
Azolla filiculoides, 32
Azollaceae, 32

B

BABY BLUE EYES. *See* Nemophila menziesii
Baccharis
douglasii, 45
pilularis, 46
BANEBERRY. *See* Actaea rubra
BEACH EVENING PRIMROSE. *See* Camissonia cheiranthifolia cheiranthifolia
BEACH MORNING GLORY. *See* Calystegia soldanella
BEACH SPECTACLEPOD. *See* Dithyrea maritima
BEACH-BUR. *See* Ambrosia chamissonis
BEDSTRAW. *See* Galium aparine
Berberidaceae, 61
Berberis aquifolium* var. *dictyota, 61
BIRD'S FOOT FERN. *See* Pellaea mucronata
BISHOP PINE. *See* Pinus muricata
BLACK COTTONWOOD. *See* Populus balsamifera trichocarpa
BLACK SAGE. *See* Salvia mellifera
Blechnaceae, 32
BLOCHMAN'S DUDLEYA. *See* Dudleya blochmaniae blochmaniae
BLOCHMAN'S LEAFY DAISY. *See* Erigeron blochmaniae
Bloomeria crocea, 152
BLUE TOAD-FLAX. *See* Linaria canadensis
BLUE-DICKS. *See* Dichelostemma capitatum capitatum
BLUE-EYED GRASS. *See* Sisyrinchium bellum
Boraginaceae, 61
BOX ELDER. *See Acer negundo* var. *negundo*
BRACKEN FERN. *See* Pteridium aquilinum var. pubescens
Brassicaceae, 63
BROAD-LEAVED CATTAIL. *See* Typha latifolia
Bromus carinatus, 156
BROWN-HEADED RUSH. *See* Juncus phaeocephalus
BUCKBRUSH. *See* Ceanothus cuneatus
Bulrushes, 144
BUSH LUPINE. *See* Lupinus arboreus

BUSH POPPY. *See* Dendromecon rigida

C

Calandrinia ciliata, 115
CALIFORNIA ASTER. *See* Lessingia filaginifolia
CALIFORNIA BAY LAUREL. *See* Umbellaria californica
CALIFORNIA BLACKBERRY. *See* Rubus ursinus
CALIFORNIA BROME. *See* Bromus carinatus
CALIFORNIA BUCKWHEAT. *See* Eriogonum fasciculatum
CALIFORNIA BUTTERCUP. *See* Ranunculus californicus
CALIFORNIA COFFEEBERRY. *See* Rhamnus calfornica californica
CALIFORNIA EVERLASTING. *See* Gnaphalium californicum
CALIFORNIA FUSCHIA. *See* Epilobium canum canum
CALIFORNIA GOOSEFOOT. *See* Chenopodium californicum
CALIFORNIA HONEYSUCKLE. *See* Lonicera hispidula var. vacillans
CALIFORNIA HUCKLEBERRY. *See* Vaccinium ovatum
CALIFORNIA MAIDEN-HAIR. *See* Adiantum jordanii
CALIFORNIA OAT GRASS. *See* Danthonia californica
CALIFORNIA POLYPODY. *See* Polypodium californicum
CALIFORNIA POPPY. *See* Eschscholzia californica
CALIFORNIA ROSE. *See* Rosa californica
CALIFORNIA SAGEBRUSH. *See* Artemisia californica
CALIFORNIA SEA-BLITE. *See* Suaeda californica
CALIFORNIA SPINEFLOWER. *See* Mucronea californica
Calochortus clavatus* var. *clavatus, 152
Calystegia
macrostegia, 72
soldanella, 72
subacaulis episcopalis, 73
Camissonia
micrantha, 103
ovata, 103
Camissonia cheiranthifolia cheiranthifolia, 102
CANYON GOOSEBERRY. *See* Ribes menziesii
Caprifoliaceae, 64
Cardamine californica, 63
***CAREX* SPECIES**, 142
Carex praegracilis, 143
CARMEL CEANOTHUS. *See* Ceanothus griseus
CARNIVAL POPPY. *See* Meconella californica
Caryophyllaceae, 66
Castilleja
affinis affinis, 132
densiflora obispoensis, 133
exserta exserta, 133
foliolosa, 134
CATCHFLY. *See* Silene laciniata major
Ceanothus
cuneatus, 119
griseus, 120
Chaenactis glabriuscula, 46
CHAMISE. *See* Adenostoma fasciculatum
Chaparral, 17
CHAPARRAL CURRANT. *See* Ribes malvaceum var. viridifolium
CHECKERBLOOM. *See* Sidalcea malviflora
Chenopodiaceae, 68
Chenopodium californicum, 70
CHIA. *See* Salvia columbariae
CHICK LUPINE. *See* Lupinus microcarpus
CHINESE HOUSES. *See* Collinsia heterophylla
Chlorogalum pomeridianum, 153
CHOCOLATE LILY. *See* Fritillaria biflora
Chorizanthe angustifolia, 112
CINQUEFOIL. *See* Potentilla anserina pacifica
Circium occidentale* var. *compactum, 47
Cistaceae, 71
Clarkia purpurea quadrivulnera, 104
***Clarkia* spp.**, 104
Claytonia perfoliata, 116
Clematis ligusticifolia, 117
CLIMBING BEDSTRAW. *See* Galium porrigens
CLOVER. *See* Trifolium spp.

CLUB-HAIRED MARIPOSA LILY. *See* Calochortus clavatus var. clavatus
CLUSTERED BROOM-RAPE. *See* Orobanche fasciculata
COAST LIVE OAK. *See* Quercus agrifolia var. agrifolia
COAST TARWEED. *See* Madia sativa
COASTAL BUCKWHEAT. *See* Eriogonum parvifolium
Coastal Dune Scrub, 13
Coastal Dune Wetlands, 27
Coastal Salt Marshes, 8
Coastal Scrub, 16
Coastal Sea Bluff Scrub, 15
Coastal Terrace Prairies, 20
COFFEE FERN. *See* Pallea andromediflora
Collinsia heterophylla, 134
COMMON GOLDENSTAR. *See* Bloomeria crocea
COMMON THREE-SQUARE. *See* Scirpus pungens
COMMON YARROW. *See* Achillea millefolium
COMPACT COBWEBBY THISTLE. *See* Circium occidentale var. compactum, *See* Circium occidentale var. compactum
Convolvulaceae, 72
Cordylanthus maritimus maritimus, 135
Cornaceae, 73
Cornus sericea, 73
COYOTEBUSH. *See* Baccharis pilularis
Crassula connata, 74
Crassulaceae, 74
CREEPING WILD-RYE. *See* Leymus triticoides
CROTON. *See* Croton californicus
Croton californicus, 79
Cryptantha sp., 62
Cucurbitaceae, 76
CUDWEED. *See* Gnaphalium purpureum
CURLY-LEAVED MONARDELLA. *See* Monardella undulata
Cuscuta spp., 77
Cuscutaceae, 77
Cyperaceae, 142
***CYPERUS* SPECIES**, 143

D

Danthonia californica, 157
DEATH CAMAS. *See* Zigadenus fremontii
DEERWEED. *See* Lotus scoparius var. scoparius
Delphinium parryi, 118
Dendromecon rigida, 107
Dennstaedtiaceae, 33
Dichelostemma capitatum capitatum, 153
DICOTS, 40
Distichlis spicata, 157
Disturbance, 29
Dithyrea maritima, 63
DODDER. *See* Cuscuta spp.
Dodecatheon spp., 116
Dryopteridae, 33
DUCKWEED. *See* Lemna spp.
Dudleya
blochmaniae blochmaniae, 74
caespitosa, 75
lanceolata, 75
spp., 76
DUNE ALMOND. *See* Prunus fasciculata var. punctata
Dune Fields, 13
DUNE GRASS. *See* Leymus mollis mollis
DUNEDELION. *See* Malacothrix incana

E

Eel-Grass. *See* Zostera spp.
ELDERBERRY. *See* Sambucus mexicana
***ELEOCHARIS* SPECIES**, 144
Emergent Wetlands, 26
Epilobium canum canum, 105
Equisetaceae, 34
Equisetum telmateia braunii, 34
Eremocarpus setigerus, 79
Eriastrum densifolium densifolium, 111
Ericaceae, 77
Ericameria ericoides, 48
Erigeron blochmaniae, 48
Erigeron glaucus, 49
Erigeron sanctarum, 49
Eriodictyon altissimum, 92
Eriogonum
fasciculatum, 112
parvifolium, 113
Eriophyllum
confertiflorum, 50
multicaule, 50
staechadifolium, 51

Erysimum insulare suffrutescens, 64
Eschscholzia californica, 108
Estuaries, 8
Euphorbiaceae, 79
Euthamia occidentalis, 51
EVENING PRIMROSE. *See* Oenothera elata hookeri

F

Fabaceae, 80
Fagaceae, 88
FALSE SOLOMON'S SEAL. *See* Smilacina racemosa
FERNS AND FERN ALLIES, 32
FIDDLENECK. *See* Amsinkia spectabilis
FIESTA FLOWER. *See* Pholistoma auritum var. auritum
FIGWORT. *See* Scrophularia californica californica
FIVE-FINGER FERN. *See* Adiatum aleuticum
Fore Dunes, 11
FOUR-SPOT. *See* Clarkia purpurea quadrivulnera
Fragaria vesca, 122
FRANKENIA. *See* Frankenia salina
Frankenia salina, 89
Frankeniaceae, 89
FREMONT COTTONWOOD. *See* Populus fremontii fremontii
Fresh Water Coastal Dune Swale, 28
Fritillaria biflora, 154
Fungi, 166
FUSCHIA-FLOWERED GOOSEBERRY. *See* Ribes speciosum

G

Galium
andrewsii andrewsii, 127
aparine, 128
porrigens, 128
Garrya elliptica, 90
Garryaceae, 90
GIANT CHAIN FERN. *See* Woodwardia fimbriata
GIANT VETCH. *See* Vicia gigantea
GIANT WILD-RYE. *See* Leymus condensatus
Gnaphalium
bicolor, 52
californicum, 52
purpureum, 53
GOLDBACK FERN. *See* Pentagramma triangularis
GOLDEN YARROW. *See* Eriophyllum confertiflorum
GOLDENBUSH. *See* Isocomea menziesii
GOLDFIELDS. *See* Lasthenia californica
GOOSE-GRASS. *See* Galium aparine
Grasslands, 19
Grindelia stricta, 53
Grossulariaceae, 90
GUM PLANT. *See* Grindelia stricta
Gymnosperms, 39

H

Hairy Wood Rushes, 150
HAYFIELD TARWEED. *See* Hemizonia congesta luzulifolia
Hazardia squarrosa, 54
HEDGE-NETTLE. *See* Stachys bullata
Helianthemum scoparium, 71
HELIOTROPE. *See* Heliotropum curassavicum
Heliotropium curassavicum, 62
Hemizonia
congesta luzulifolia, 54
increscens increscens, 55
Heteromeles arbutifolia, 122
Heterotheca grandiflora, 55
Heuchera pilosissima, 131
HOARY NETTLE. *See* Urtica dioica ssp. holosericea
Holodiscus discolor, 123
Horkelia cuneata, 123
HORSETAIL. *See* Equisetum telmateia braunii
HUMMINGBIRD SAGE. *See* Salvia spathacea
Hydrocotyle verticillata, 41
Hydrophyllaceae, 92

I

INDIAN KNOB MOUNTAINBALM. *See* Eriodictyon altissimum
INDIAN PAINTBRUSH. *See* Castilleja affinis affinis
INDIAN PINK. *See* Silene laciniats major
INTERIOR LIVE OAK. *See* Quercus wislizeni var. frutescens
Intertidal, 7
Iridaceae, 147

Iris douglasiana, 147
ISLAY BERRY. *See* Prunus ilicifolia ilicifolia
Isocoma menziesii, 56

J

JAUMEA. *See* Jaumea carnosa
Jaumea carnosa, 56
JOHNNY JUMP-UPS. *See* Viola pedunculata
Juncaceae, 148
Juncaginaceae, 151
Juncus
patens, 150
***JUNCUS* SPECIES**, 148
Juncus acutus leopoldii, 149
Juncus phaeocephalus, 149
JUNEGRASS. *See* Koeleria macrantha

K

KNOTWEED, 114, *See* Polygonum paronychia
Koeleria macrantha, 158

L

Lamiaceae, 95
LARKSPUR. *See* Delphinium parryi
Lasthenia californica, 57
Lathyrus vestitus, 80
Lauracae, 98
Layia glandulosa, 57
LEATHER LEAF FERN. *See* Polypodium scouleri
Lemna spp., 151
Lennoaceae, 99
Lessingia filaginifolia, 58
Leymus
condensatus, 158
mollis mollis, 159
triticoides, 159
Lichens, 165
Liliaceae, 152
Limonium californicum, 110
Linaria canadensis, 135
Liverworts, 163
Lonicera hispidula* var. *vacillans, 64
Lonicera involucrata* var. *ledebourii, 65
Lotus
heermannii var. orbicularis, 81
scoparius var. scoparius, 81
LOTUS. *See* Lotus heermannii var. obicularis
Lupinus
albifrons, 82
arboreus, 82
bicolor, 83
chamissonis, 83
hirsutissimus, 84
microcarpus, 84
nanus, 85
succulentus, 85
***LUZULA* SPECIES**, 150

M

Madia sativa, 58
Malacothrix incana, 59
Malvaceae, 99
Malvella leprosa, 99
MAN-ROOT. *See* Marah fabaceus
MANY STEM WOOLY SUNFLOWER. *See* Eriophyllum multicaule
Marah fabaceus, 76
MARSH BACCHARIS. *See* Baccharis douglasii
MARSH PENNYWORT. *See* Hydrocotyle verticillata
MEADOW RUE. *See* Thalictrum fenderli
Meconella linearis, 108
MILK MAIDS. *See* Cardamine californica
Mimulus
aurantiacus, 136
cardinalis, 136
guttatus, 137
MINER'S LETTUCE. *See* Claytonia perfoliata
MINIATURE LUPINE. *See* Lupinus bicolor
MISTLETOE. *See* Phoradendron spp.
Mixed Grasslands, 21
MOCK HEATHER. *See* Ericameria ericoides
Monardella undulata, 95
MONKEYFLOWER. *See* Mimulus guttatus
MONOCOTS, 142
MORNING GLORY. *See* Calystegia sp.
MORRO MANZANITA. *See* Arctostaphylos morroensis
MOSQUITO FERN. *See* Azolla filiculoides
Mosses, 163

Mucronea californica, 113
MUGWORT. *See* Artemisia douglasiana
Myrica californica, 100
Myricaceae, 100

N

NAKED SEEDS, 39
Nasella pulchra, 160
Native Grasslands, 20
Navarretia squarrosa, 111
Nemophila menziesii, 92
NIGHTSHADE. *See* Solanum douglasii
Non-native Grasslands, 21
Nutsedges, 143
NUTTALL'S MILK VETCH. *See* Astragalus nuttallii var. nuttallii
Nyctaginaceae, 101

O

Oak Woodlands, 22
OCEANSPRAY. *See* Holodiscus discolor
Oemleria cerasiformis, 124
Oenothera elata hookeri, 105
Onagraceae, 102
OREGON GRAPE. *See* Berberis aquifolium var. dictyota
Orobanchaceae, 106
Orobanche fasciculata, 106
OSO BERRY. *See* Oemleria cerasiformis
OSO MANZANITA. *See* Arctostaphylos osoensis
OXALIS. *See* Oxalis albicans pilosa
Oxalis albicans pilosa, 106

P

Paeonia californica, 107
Paeoniaceae, 107
Pallea andromedifolia, 36
Papaveraceae, 107
Pellaea mucronata, 37
Pentagramma triangularis, 37
PEONY. *See* Paeonia californica
Phacelia distans, 93
PHACELIA. *See* Phacelia spp.
Phacelia imbricata, 93
***Phacelia* spp.**, 94
Phacelia viscida, 94
PHLOX-LEAVED BEDSTRAW. *See* Galium andrewsii andrewsii
Pholisma arenarium, 99
Pholistoma auritum* var. *auritum, 95
***Phoradendron* spp.**, 141
PHYLA. *See* Phyla nodiflora
Phyla nodiflora, 139
Phyllospadix spp., 161
PICKLEWEED. *See* Salicornia virginica
Pinaceae, 39
PINCUSHIONS. *See* Chaenactis glabriuscula
Pinus muricata, 39
Pioneer Dunes, 11
PLANTAGO. *See* Plantago erecta
Plantago erecta, 109
Platanaceae, 109
Platanus racemosa, 109
Plumbaginaceae, 110
Poaceae, 156
POISON OAK. *See* Toxicodendron diversilobum
Polemoniaceae, 111
Polygonaceae, 112
Polygonum paronychia, 114
Polypodiaceae, 34
Polypodium californicum, 34
Polypodium scouleri, 35
Polystichum munitum, 33
POPCORN FLOWER. *See* Crytantha sp.
Populus
balsamifera trichocarpa, 129
fremontii fremontii, 129
Portulacaceae, 115
Potentilla anserina pacifica, 124
Primulaceae, 116
Prunus
fasciculata* var. *punctata, 125
ilicifolia ilicifolia, 125
Pteridaceae, 35
Pteridium aquilinum* var. *pubescens, 33
Pteridophytes, 32
Pterostegia drymariodes, 114
PURPLE NEEDLE GRASS. *See* Nasella pulchra
PURPLE NIGHTSHADE. *See* Solanum xanti
PURPLE OWL'S CLOVER. *See* Castilleja exserta exserta
Pygmy Oak Woodlands, 23
PYGMY-WEED. *See* Crassula connata

Q

Quercus

agrifolia var. agrifolia, 88
wislizeni var. frutescens, 89

R

Ranunculaceae, 117
Ranunculus californicus, 118
RED MAIDS. *See* Calandrinia ciliata
RESURRECTION PLANT. *See* Selaginella bigelovii
Rhamnaceae, 119
Rhamnus
californica californica, 120
crocea, 121
Ribes
malvaceum var. ***viridifolium***, 90
menziesii, 91
speciosum, 91
Riparian, 25
Rocky Outcrops, 18
Rosa californica, 126
Rosaceae, 121
Rubiaceae, 127
Rubus
parviflorus, 126
ursinus, 127
Rumex salicifolia **var.** ***crassus***, 115
RUSH. *See* Scirpus acutus var. occidentalis
Rushes, 148
RUSH-ROSE. *See* Helianthemum scoparium

S

SAINT'S DAISY. *See* Erigeron sanctarum
Salicaceae, 129
Salicornia virginica, 70
Salix lasiolepis, 130
SALT GRASS. *See* Distichlis spicata
SALT MARSH BIRD'S-BEAK. *See* Cordylanthus maritimus maritimus
Salvia
columbariae, 96
mellifera, 96
spathacea, 97
Sambucus mexicana, 65
SAN LUIS OBISPO COUNTY MORNING GLORY. *See* Calystegia subacaulis episcopalis
SAN LUIS OBISPO PAINTBRUSH. *See* Castilleja densiflora obispoensis
Sand Dune Communities, 10
SAND FOOD. *See* Pholisma arenarium
SAND VERBENA. *See* Abronia spp.
SAND-SPURREY. *See* Spergularia macrotheca var. macrotheca
SANICLE. *See* Sanicula crassicaulis
Sanicula crassicaulis, 41
Sanicula maritima, 42
Satureja douglasii, 97
Saururaceae, 130
SAW-TOOTHED GOLDENBUSH. *See* Hazardia squarrosa
Saxifragacea, 131
SCARLET MONKEYFLOWER. *See* Mimulus cardinalis
Scirpus
acutus **var.** ***occidentalis***, 145
americanus, 145
microcarpus, 146
pungens, 146
SCIRPUS **SPECIES**, 144
Scrophularia californica californica, 137
Scrophulariaceae, 131
SEA LAVENDER. *See* Limonium californicum
SEA-PINK. *See* Armeria maritima californica
SEASIDE DAISY. *See* Erigeron glaucus
SEASIDE WOOLY SUNFLOWER. *See* Eriophyllum staechadifolium
Sedges, 142
Selaginella bigelovii, 38
Selaginellaceae, 38
SENECIO. *See* Senecio blochmaniae
Senecio blochmaniae, 59
SHOOTING STAR. *See* Dodecatheon spp.
Sidalcea malviflora, 100
Silene laciniata major, 66, 67
SILK TASSEL. *See* Garrya elliptica
SILVER DUNE LUPINE. *See* Lupinus chamissonis
SILVER LUPINE. *See* Lupinus albifrons
Sisyrinchium bellum, 147
SKUNKWEED. *See* Navarretia squarrosa
SKY LUPINE. *See* Lupinus nanus
SMALL-HEADED BULRUSH. *See* Scirpus microcarpus
SMARTWEED. *See* Polygonum paronychia
Smilacina racemosa, 154
SNAPDRAGON. *See* Antirrhinum spp.

SNOWBERRY. *See* Symphoricarpos mollis
SOAP PLANT. *See* Chlorogalum pomeridianum
Solanaceae, 138, 139
Solanum
douglasii, 138
xanti, 138
Solidago confinis, 60
SOUTHERN GOLDENROD. *See* Solidago confinis
SPEARSCALE. *See* Atriplex triangularis
Spergularia macrotheca* var. *macrotheca, 67
SPIKE-MOSS. *See* Selaginella bigelovii
Spike-rushes, 144
SPINEFLOWER. *See* Chorizanthe angustifolia
SPINY BULRUSH. *See* Juncus acutus leopoldii
SPINY REDBERRY. *See* Rhamnus crocea
SPREADING RUSH. *See* Juncus patens
Stabilized Dunes, 12
Stachys bullata, 98
Stephanomeria cichoriacea, 60
STICKY MONKEYFLOWER. *See* Mimulus aurantiacus
STICKY PHACELIA. *See* Phacelia viscida
STINGING LUPINE. *See* Lupinus hirsutissimus
Strand, 9
Suaeda californica, 71
SUFFRUTESCENT WALLFLOWER. *See* Erysimum insulare suffrutescens
SUN CUP. *See* Camissonia spp.
Surf Grass. *See* Phyllospadix spp.
SWEET PEA. *See* Lathyrus vestitus
Symphoricarpos mollis, 66

T

TARRAGON. *See* Artemesia dracunculus
Tarweed. *See* Hemizonia increscens increscens
TELEGRAPH WEED. *See* Heterotheca grandiflora
Thalictrum fenderli, 119
THIMBLEBERRY. *See* Rubus parviflorus
THRIFT. *See* Armeria maritima californica
Toxicodendron diversilobum, 40
TOYON. *See* Heteromeles arbutifolia
Trifolium
depauperatum var. truncatum, 86
fucatum, 86
monanthum var. monanthum, 87
willdenovii, 87
Triglochin concinna, 151
Trillium angustipetalum, 155
TULE. *See* Scirpus acutus var. occidentalis
TURKEY MULLEIN. *See* Eremocarpus setigerus
TWINBERRY. *See* Lonicera involucrata var. ledebourii
TWO-TONE EVERLASTING. *See* Gnaphalium bicolor
Typha latifolia, 160
Typhaceae, 160

U

Umbellaria californica, 98
Urtica dioica* ssp. *holosericea, 139

V

Vaccinium ovatum, 78
Verbena lasiostachys* var. *lasiostachys, 140
Verbenaceae, 139
VERVAIN. *See* Verbena lasiostachys var. lasiostachys
Vicia gigantea, 88
Viola pedunculata, 140
Violaceae, 140
VIRGIN'S BOWER. *See* Clematis ligusticifolia
Viscaceae, 141

W

WAKEROBIN. *See* Trillium angustipetalum
WAX MYRTLE. *See* Myrica californica
WESTERN GOLDENROD. *See* Euthamia occidentalis
WESTERN SWORD FERN. *See* Polystichum munitum
WESTERN SYCAMORE. *See* Platanus racemosa
Wetlands, 24
WHITE LAYIA. *See* Layia glandulosa

WILLOW DOCK. *See* Rumex salicifolia var. crassus
WIRE-LETTUCE. *See* Stephanomeria cichoriacea
WOOD STRAWBERRY. *See* Fragaria vesca
Woodwardia fimbriata, 32
WOOLLY INDIAN PAINTBRUSH. *See* Castilleja foliolosa

Y

YERBA BUENA. *See* Satureja douglasii
YERBA MANSA. *See* Anemopsis californica

Z

Zigadenus fremontii, 155
Zostera spp., 161
Zosteraceae, 161

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Dedicated to Dr. David J. Keil

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