

# Non-native Plants of the Estero Bay Area

Lisa Andreano



# Introduction

## About This Guide

This is a photo guide to the most commonly seen exotic plant species in the Estero Bay area wild lands. The species presented have been taxonomically arranged by plant family according to the Jepson Manual – Higher Plants of California (Hickman et al, 1993). A brief description of each species and its preferred habitat is provided. If a particular species is considered a threat to natural habitats, sensitive species or estuary health, it is indicated. This is not a comprehensive guide to every single non-native in our area, but a guide to the most commonly seen or most problematic exotics in our wild lands. This is the first draft of this guide. Revised editions will be made available as new species are incorporated into the text. For a complete list of exotic plant species in our local open and please see Table 1 at the end of this document. Species known to be in the Estero Bay area but not covered in the guide are indicated in the table.

Creation of this guide was funded by the Bay Foundation through the Morro Bay National Estuary Program Education Outreach grant division. A variety of sources were used in the making of this guide. The main sources include the Jepson Manual - Higher Plants of California (Hickman et al, 1993), California Vegetation (Holland and Keil, 1995), Invasive Plants of California's Wildlands (Bossard et al, 2000), and Weeds of the West (Whitson et al, 2001). Special thanks goes out to Cheryl of the Morro Bay National Estuary Program, Dr. David J. Keil of California Polytechnic SLO, California State Parks, and the SLO Land Conservancy for their help and information.

## Map of area covered in this guide.



## A Note About Non-native Species

A non-native plant species is any plant species that has not evolved in a particular place throughout time and is present in a given area due to introduction. Any plant that is not native to the Estero Bay area is locally non-native. There are different degrees of exotics. There are those that are native to California but not native to Estero Bay; there are those that are not native to California but do not pose a serious threat to local natural systems; and there are those that are not native to California and pose a serious threat to local ecosystems. The later are the real concern. They are typically prolific seeders or spreaders, and out-compete local native species and greatly lower the biodiversity of Estero Bay terrestrial communities.

The Bureau of Land Management (BLM) estimates that over 100 million acres in the United States are already lost to invasive species and that this number increases at a rate of 8-20% per year in the United States. This 8-20% increase translates to an area twice the size of Delaware each year that is lost to exotic species invasions.

Some non-native species tend to be prolific, easily dispersed by wind, vegetatively spreading by rhizomes and stolons, or have appendages such as barbs and prickles, and resins to aid in adhesion to a dispersal agent and have seeds that persist for many generations in the seed bank. Some are very aggressive competitors for food, and moisture, others are prolific seeders, who dominate the resource allocation in the local seed bank, while others spread rapidly through vegetative spreading by roots, rhizomes, and stolons.

Humans have both directly and indirectly been the largest dispersal agent of non-native species since the beginning of time. While seed dispersal is a natural phenomenon, the rate at which humans have dispersed non-native plants through livestock, landscaping, passively by hiking through a mustard patch or a grassland of wild oats. With this exponential introduction and dispersal of non-native species (many of which are prolific spreaders), native species have been largely replaced, not having evolved with the additional and often aggressive competition pressures.

The introduction and establishment of non-native species threatens the genetic integrity of the local gene pool, which has evolved here, with the passing of time. Native plant species, not having evolved with such vigorous competition, may be overtaken. Loss of native plant habitat due to an unnatural introduction of non-native species can destroy millions of years of local evolution in a life time.

### **Why Should We Care?**

Exotic plant species pose a major threat to the health and diversity of the unique flora and fauna compositions in the Morro Bay and Los Osos area. Here, in San Luis Obispo County, we have one of the highest numbers of endemic species in the state. The rich biodiversity along the coastal reaches of our county is directly threatened by exotics due to both the sensitive nature of coastal habitats, and the ability of many exotics to “travel” throughout watersheds.

According to preliminary State Park Resource inventories, about 123 non-native plant species exist on State Park land in the Estero Bay area alone. This, in addition to species list from Land Conservancy, and the invasive non-native species that are used in landscaping yield a total

in excess of 500 non-native species locally. For the purposes of this guide, the most common species have been compiled.

It is the author's hope that local land managers, landscapers, and home owners will use this guide to make educated decisions about the plants that they use in their restoration efforts and landscaping as well as raise awareness about dispersal of non-native species and the need for their eradication.

# The Flora

# Gymnosperms

Gymnosperms are not true flowering plants, or angiosperms. They have needle or scale like leaves and have reproductive cones and cone scales. Most gymnosperms are trees such as pines, cedar, cypress and junipers, but some are shrubs such as Mormon tee. The 2 gymnosperm non-natives in the Estero Bay area are Monterey Cypress and Monterey Pine. They are natives to California but are not native to Estero Bay. In Estero Bay we have one native pine, *Pinus muricata*, the Bishop Pine. The only notable population is just outside of, but visible from, State Park property in Montana de Oro.

## CUPRESSACEAE

### Cypress Family

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#### **Cupressus macrocarpus**

#### MONTEREY CYPRESS

**Description:** Bark is gray-brown and fibrous. Opposite scale-like leaves are green and appressed. Monoecious (separate male and female flowers). Pollen cone (male) is yellow while the pistillate (female cone) is woody and round with peltate (umbrella-like) cone scales. Seeds are winged. Canopy sometimes appeared stacked in asymmetrical layers giving the overall look that of a large bonsai tree.

**Notes:** This species is native to the Monterey Peninsula.

# PINACEAE

## Pine Family

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### ***Pinus radiata***

#### MONTEREY PINE

**Description:** Native populations include the Monterey Peninsula, Cambria, and a few islands off of Baja California. When mature, this tree appears to have dark, almost black bark and a noticeably rounded top. It has three needles per fascicle (needle bundle sheath), and an asymmetrical cone. The Monterey pine is believed to be semi-serotinous, meaning that some of the cone scales open with maturity and desiccation, while the others required prolonged dry hot temperatures, or a fire to open the cones and disperse the leaves.

**Notes:** These trees have evolved with periodic fires. In order to maintain healthy stands of the Monterey pine, fires are needed to clear the under story, remove unhealthy individuals, open the canopy, and kill pathogens. With plantings in residential areas and fire suppression, most of the Monterey pines in the Estero Bay area are sick, infected by the pine pitch cancer disease, a fungal pathogen. It is spread by the pine pitch canker beetle. Locally, in residential areas, sick trees are cut down and mulched. The mulch is then spread on site or hauled off and spread elsewhere, dispersing the contaminated mulch and spreading the disease.



# Angiosperms

Angiosperms are true flowering plants, meaning that they have flowers that are composed of petals and sepals, and ovary with a stigma and style (the female reproductive parts), and the filaments, anthers and pollen (the male reproductive parts). The true flowering plants are divided into two groups, the monocots and the dicots. The dicotyledons (dicots) consist of flowering plant families that have two cotyledons, complex (typically webbed or netted) veins, and flower parts in 4's and 5's. Monocotyledons (monocots) have one cotyledon, parallel veins and flower parts in 3's.

## Dicots

### AIZOACEAE

#### Fig-Marigold Family

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**Carpobrotus chilensis** and **Carpobrotus edulis**

SEA FIG and HOTTENTOT FIG

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**Habitat:** Escaped cultivation and purposefully planted for dune stabilization.

Coastal dunes and sea bluffs, roadsides, disturbed sites

**Description:** These plants, from the Aizoaceae family, were originally introduced from South Africa to stabilize dunes and roadsides. They spread rapidly through vegetative means and displace native vegetation. They are prostrate growing perennials with long succulent leaves that are round to triangular in cross section. Both species of ice plant root at the nodes forming dense mats wherever they occur. *Carpobrotus chilensis* has magenta flowers that are 2 - 2 ½ inches in diameter while the flowers of *Carpobrotus edulis* are pink or yellow and are 2 ½ - 6 inches in diameter. These species mainly occur on the pioneer dunes closest to the ocean but also occurs in patches on and behind the fore dunes and into the wetlands as well as many other disturbed areas such as roadsides.

**Recommended treatment:** Manual removal has proven to be successful, however it requires constant attention and is there for very labor intensive. Manual removal is sufficient for one's own yard but chemical removal of *Carpobrotus* spp. is the most efficient eradication method. Iceplant can be left in place after treatment to serve as mulch. Reseeding or replanting with natives is recommended in a landscaping situation but not necessary where native seeds are abundant in the seed bank.



**Conicosia pugioniformis**

SLENDER LEAF ICEPLANT

**Habitat:** Coastal dunes, disturbed sites. Escaped cultivation.

**Description:** Perennial. Prostrate and spreading by means of vertical underground stems. Its leaves are slender and succulent, as its name implies. Yellow petals are elongated. Fore and stabilized dunes.

**Recommended Treatment:** Manual removal must be repeated each season, but adequate in one's own yard. Chemical removal and a follow up spot treatments is recommended for large populations.



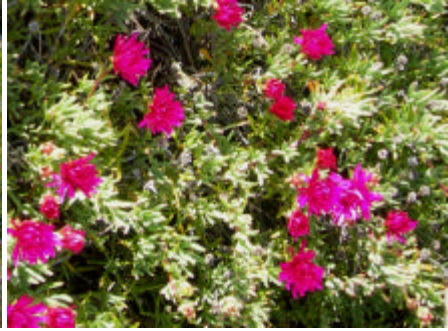
***Tetragonia tetragonioides***

NEWZEALAND SPINACH

**Habitat:** Coastal dunes, disturbed sites. Escaped cultivation.

**Description:** A prostrate growing annual species. Opposite leaves are succulent and triangular.

**Notes:** This species blankets much of Morro Rock, having out competed native plant species and continues to encroach on the remaining native stands. This species also covers historic seabird nesting habitat on Morro Rock.



**Mesembryanthemum crystallinum**

CRYSTALLINE ICEPLANT

**Habitat:** Coastal dunes, disturbed sites. Escaped cultivation.

**Description:** Annual. Prostrate and spreading. Upon close inspection the fleshy leaves have a highly lobed surface composed of inflated succulent cells, giving them a crystallized appearance.

**APIACEAE**

**Carrot Family**

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**Anethum graveolens**

[www.linnaeus.nrm.se](http://www.linnaeus.nrm.se)

DILL

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Anise scented annual. According to the Jepson Manual, the leaves are predominately cauline and are so highly dissected that they appear thread-like.

The inflorescence is a compound umbel composed of yellow petaled flowers.

Notes: Locally common in grasslands, such as those found in Morro Bay State Park and Estero Bluffs, forming patches about calf high.



### **Conium maculatum**

POISON HEMLOCK

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Tall and clump forming. Purple spots along stem. Leaves are dissected and lobed. Inflorescence is a compound umbel of white flowers. This plant is highly toxic when ingested.

**Recommended Treatment:** Eradication of hemlock is challenging, requiring multiple treatments. Manual involves the use of loppers and or machetes, and digging out the root clump. Chemical treatment is more successful after the bulk of the plant material has been hacked back.



**Apium sp.**

WILD CELERY

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Annual species. Ridged stems. Compound umbel of rather inconspicuous flowers. Small oval fruits. Escaped cultivation. Occurs in small, scattered patches in grasslands with seasonal water.



**Foeniculum vulgare**

FENNEL

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Anise scented perennial. Erect stems form large clumps. Spreads rapidly. Leaves are compound and finely dissected and thread-like. Inflorescence is a compound umbel or yellow flowers. Fruit has elongated ribs.

**Recommended Treatment:** Eradication of fennel is challenging, requiring multiple treatments. Manual removal involves the use of loppers and or machetes, and digging out the root clump. Chemical treatment is more successful after the bulk of the plant material has been hacked back.



**Torilis arvensis**

[www.saxifraga.de](http://www.saxifraga.de)

TORILIS

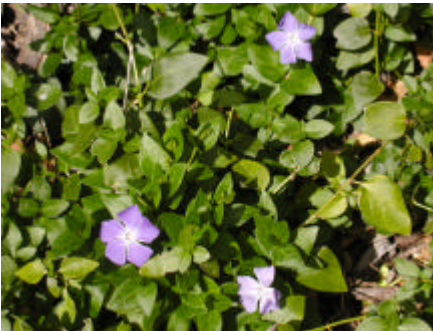
**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Annual species. Covered in fine bristly hairs. Leaves are pinnately dissected. Inflorescence is a compound umbel of white flowers, sometimes tinged red. Fruit is ribbed and coated in fine prickles which conceal scattered oil tubes. Prickles aid in dispersal of the seed by easily attaching to anything that brushes against it. Seeds from this species are notorious for ruining socks and shoe laces. Forms scattered moderately sized stands.

**APOCYNACEAE**

**Dogbane Family**

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**Vinca major**

PERIWINKEL

**Habitat:** Wooded areas, including riparian corridors, coastal scrub, urban interfaces. Escaped cultivation.

**Description:** Spreading to vining. Forms large, thick stands that eventually blanket an area. Shiny green, opposite leaves. Single bluish-purple star-shaped flowers are tubed below, with five distinctly lobed petals, lightening towards the center.

## ARALIACEAE

### Ginseng Family

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#### *Hedera helix*

ENGLISH IVY

**Habitat:** Riparian areas. Escaped cultivation.

**Description:** Tough, dense woody vine. Spreads aggressively, climbs with aid of aerial rootlets, overtaking an area. The shiny dark green leaves are simple, alternate and palmately lobed. Escaped cultivation.

## ASTERACEAE

### Sunflower Family

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#### *Anthemis cotula*



MAYWEED, CHAMOMILE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Branched stems and leaves alternate leaves are pinnately lobed and divided. Conspicuous white flowers. Pungent scent. Found in open grasslands.



**Artemisia pycnocephalus**

BEACH WORMWOOD, COASTAL SAGEWORT

**Habitat:** Coastal dunes, disturbed sites. Misguides restoration sites.

**Description:** Erect stems. Often forms mounds. Grayish, tomatoes (densely soft-hairy) highly lobed and divided leaves. Flowers are arranged in a spike-like manner.

**Notes:** This soft looking shrub is related to our local *Artemisia californica* which is a native dominate in coastal scrub communities. This species is not native here, but does occur naturally north of here, along the Monterey coast. This species is sometimes planted in landscaping and wayward restoration projects as a drought tolerant species, but does not belong along the coastlines in our county.



## **Carrduus pycnocephalus**

ITALIAN THISTLE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Tall erect perennial. Slightly tomatoes. Spiny wing-like ridges or projections along the length of the stems. Leaves are linear with spiny lobed margins. Layers of spiny phyllaries subtend each purple-pink flower head.

**Notes:** This plant spreads rapidly, putting off thousands and thousands of seeds at a time. Common along roadsides, in abandoned lots, and in moist drainages. It often invades draws, drainages and marshy fringes, taking advantage of the extra water, forming large patches or stands.

**Recommended Treatment:** As with all of the non-native, invasive thistles, manual removal is impractical on a large scale, but suitable for one's own yard. For populations such as the ones in our wild lands, chemical treatment is most effective.



[www.wsvic.org.au](http://www.wsvic.org.au)



[www.viarural.com.ar](http://www.viarural.com.ar)

## **Carthamus lanatus**

WOOLLY DISTAFF THISTLE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Light golden or straw colored, and tomatoes to cobwebby. Extremely sharp and spiny leaves and phyllary tips. Yellow flowers. This is a particularly unfriendly species. It is completely armored with spines and hairs that may cause tiny splinters.



[www1.lf1.cuni.cz](http://www1.lf1.cuni.cz)



[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)

## **Centaurea melitensis**

TOCALOTE

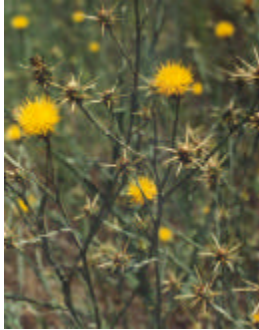
**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Erect annual. Leaves have short stiff hairs. Phyllaries are tipped with sharp spines. This species has slightly shorter spines than those of *C. solstitialis*. Leaves are resin dotted. There are many small tube-

like yellow flowers that compose each flower head. Found along roadsides, then slowly spreading into near by open spaces.



[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)



[www.callutheran.edu](http://www.callutheran.edu)



[www.usgs.nau.edu](http://www.usgs.nau.edu)

## ***Centaurea solstitialis***

### YELLOW STAR THISTLE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Annual. Erect. Leaves with sharp spine tipped serrations, and short stiff bristles. Rows of extremely sharp spine tipped phyllaries subtend the flowers.

**Notes:** This species is highly invasive. It is widespread in grasslands and savannahs in inland areas of the county and slowly finding its way to the coast.

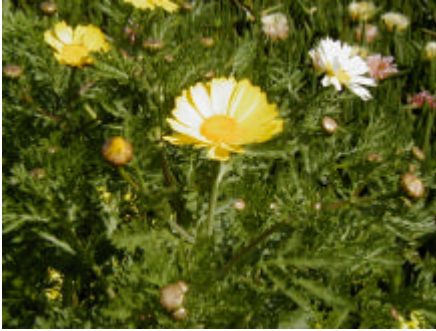


## ***Chamomilla sauenolens***

### PINEAPPLE WEED

**Habitat:** Grasslands, dirt roads, disturbed sites. Escaped cultivation.

**Description:** Small annual species. Low growing. Basal stems with sessile pinnately lobed leaves. Petals reduced. Common in disturbed areas. Sweet aromatic scent.



**Chrysanthemum sp.**

CHRYSANTHEMUM

**Habitat:**

**Description:** Perennial shrub. Erect stems, alternate leaves are pinnately lobed. Yellow petals. Escaped cultivation. Especially becoming a problem along the suburban-sand dune interface in Morro Bay.



**Cirsium vulgare**

BULL THISTLE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Forms from a basal rosette of large green spiny leaves. Veins on lower leaf surface are raised. Leaves with hairs, more dense when young, also has glandular hairs. Large purple flower heads are subtended by rows of sharply pointed phyllaries.

Will take over in large patches forming dense, inhospitable stands.



### ***Cotula cornipifolia***

BRASS BUTTONS

**Habitat:** Particularly along the fringes of wetlands and pond edges.

**Description:** Low growing species, forms large populations, Perennial. Fleshy stems can root at the node. Leaves many be linear to oblong, entire asymmetrically lobed and toothed. Flower head small and button like, thus the name. Petals are reduced.



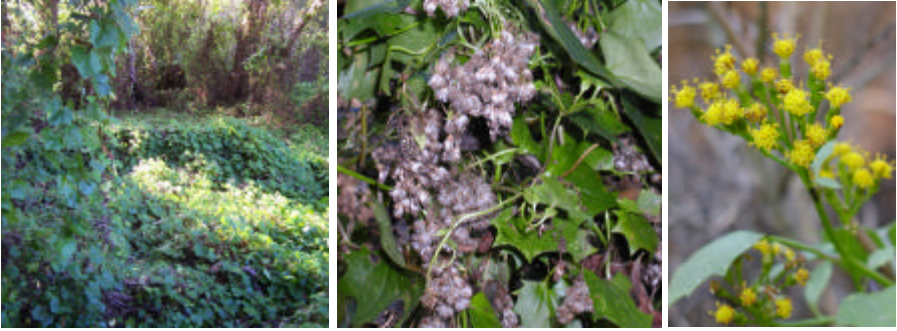
### ***Cynara cardunculus***

[www.timetotrack.com](http://www.timetotrack.com)

WILD ARTICHOKE

**Habitat:** Grasslands , roadsides, disturbed sites

**Description:** Stems erect. Basal and cauline leaves are alternate, pinnately lobed and spinned. Series of spine tipped phyllaries subtend the large purple flower. Escaped cultivation.



### ***Delairea odorata***

CAPE IVY

**Habitat:** Devastates local riparian corridors. Encroaching into woodlands and chaparral stands in Morro Bay State Park.

**Description:** Aggressive, highly invasive vine. Roots at the nodes. Glabrous leaves and stems. Leaves are palmately lobed. Small clusters of yellow flower heads. This species, travels throughout the watershed, establishing populations down the stream reaches. Vast areas in lower watersheds are maybe become completely overrun by dense mats of this plant.



### ***Gazania linearis***

GAZANIA

**Habitat:** Escaped cultivation. Coastal dunes and disturbed lots.

**Description:** Spreading or mat-like. Typically branching from base. Leaves are green above and slightly white-hairy below. Undersurface of yellow ray flowers is slightly dark. Escaped cultivation. Especially becoming a problem along the suburban-sand dune interface in Morro Bay.



### **Gnaphalium leuto-album**

CUD-WEED

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Perennial. Woolly. Linear to spoon-shaped leaves have irregular margins. Unscented. Common in disturbed sites and dirt lots. Small compact flowers heads are white to straw colored.



### **Hedypnois cretica**

CRETE WEED

**Habitat:** Grasslands , roadsides, disturbed sites

**Description:** A small annual. Covered in fine stiff hairs or bristles. Lower leaves taper at the base near the stem, upper leaves oblong. Yellow ligulate (no disk flowers) flowers make up the head.





**Helinium sp.**

SNEEZEWEED

**Habitat:** Grasslands, roadsides, disturbed sites. Seen here at Chorro Flats.

**Description:** Tall erect stems. Stem appears ridged. Lower leaves with winged petioles. Upper leaves usually sessile but still winged. Sphere like flower head with reduced disk flowers and strongly recurved ray flower petals.



**Lactuca spp.**

PRICKLY LETTUCE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Erect prickly stems. Leaves are thick and stiff, lobed, prickly, and clasp stem at base. Exudes a milky sap when the tissue is severed. Petals are a pale yellow and indistinct.



## **Picris echioides**

BRISTLEY OX TOUNGE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Forms from a basal rosette of leaves. Stems are covered in stiff branch-tipped bristly hairs. Leaves covered in additional prickles. Yellow ligulate flower heads.



## **Silybum marianum**

MILK THISTLE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Alternate leaves are spiny, dentate, and lobed and have obvious white veins. Spine-tipped winged petioles clasp the stem at base of leaf. Large dense purple flower head is subtended by a series of spine tipped phyllaries that spread with maturity. Highly invasive



**Sonchus spp.**

SOW THISTLE

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** There are two invasive *Sonchus* species in our area. They are *S. asper* and *S. oleraceus*. *S. asper asper* differs from *S. oleraceus* by the roundness of the clasping lobes of the leaves while *S. oleraceus* has acute tips on the clasping lobes. They both have yellow ligulate heads and are annual weedy species. Glandular hairs present. Most common in disturbed areas such as roadsides and old lots, penetrating grassland areas.



### **Xanthium spinosum**

#### SPINY COCKLEBUR

**Habitat:** Grasslands, roadsides, disturbed sites. Locally common in moist sites. Seen here at Chorro Flats.

**Description:** Erect stems are very rigid. Tough, slender and sharp-tipped spines occur in stem and leaf Axils. Alternate green leaves are lobed. The nativity of this species is debated.



### **Xanthium strumarium**

#### COCKLEBUR

**Habitat:** Grasslands, roadsides, disturbed sites. Locally common in moist sites. Seen here at Chorro Flats.

**Description:** Erect stems are greenish red and sometimes have black spots. Long reddish petioles subtend 3 lobed leaves with toothed margins. Fruit is cylindrical and covered in thick fleshy spines.

The nativity of this species is debated.

## BORAGINACEAE

### Borage Family

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[www.missouriplants.com](http://www.missouriplants.com)



[www.atlas-roslin.pl](http://www.atlas-roslin.pl)

#### **Lithospermum arvense**

STONESEED

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Erect annual. Calf- high. Sessile (lacking a petiole) entire leaves. Single whitish flower in axils near stem tips. Fruit in nutlets. Disturbed areas and roadsides.

## BRASSICACEAE

### Mustard Family

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#### **Brassica nigra**

BLACK MUSTARD

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Annual. Forms large clumps and eventually stands of individuals. Highly branched. Covered in stiff hairs. Inflorescence is a

panicle of yellow compound flower heads. Leaves are lobed, upper ones smaller and with no pedicle. The fruit (called a silique) is appressed to, or seemingly flattened towards, the stem.



**Brassica rapa**

FIELD MUSTARD

**Habitat:** Grasslands, roadsides, cultivated and disturbed sites

**Description:** Small annual erect species. Tender green leaves are pinnately lobed. The upper leaves are noticeably sessile and have a wavy clasping base. Fruit is ascending to spreading, meaning that it tends to fall away from the stem.



**Cakile maritima**

SEA ROCKET

**Habitat:** Coastal fore dunes.

**Description:** Annual prostrate, almost mounded species. A common plant seen in the fore dunes along Estero Bay. It has thick fleshy stems

that are a light green. It has thick fleshy leaves that are sessile, and lobed along the margins. Pale purple flowers. The fruit is stalked and segmented. It is designed to separate from its receptacle, almost launching from its base, as it becomes desiccated.



***Cardaria draba***

HOARY CRESS

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Lower stems have sparse hairs. Basal leaves are petioled and more or less entire while the upper cauline leaves along the stem tend to be sessile(lacking a petiole) and clasping. Inflorescence is composed of many tiny white, four-petal flowers.



***Hirshfeldia incana***

PERENNIAL MUSTARD

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Biennial. Highly branched. Base of plant has stiff hairs making it appear grayish in color. Leave lobed, especially near base with crenate to dentate margins. Fruit is erect and appressed to stem.



**Lobularia maritima**

SWEET ALYSSUM

**Habitat:** Urban interfaces.

**Description:** Low growing bunch-like. This delicate mounded annual species is common in most yards, roadsides and shopping mall landscapes. Leaves are opposite and linear.



**Lunaria annua**

[www.pondproductions.com](http://www.pondproductions.com)

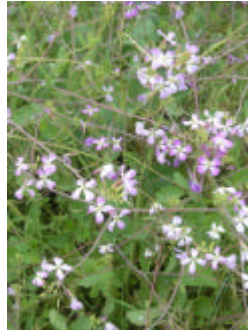
[www.bbc.co.uk](http://www.bbc.co.uk)

MOONWORT

**Habitat:** Disturbed riparian and woodland sites.

**Description:** Annual species. Many basally grouped leaves around the base of branched stems. Base of leaves are rounded to heart-shaped (reniform). Purple flowers. Fruit is round and flattened, transparent when dry.





**Raphinis sativus**

WILD RADISH

**Status:**

**Habitat:** Grasslands, roadsides, disturbed sites

**Description:** Large clump forming annual. Deep taproot. Lower leaves more highly lobed than upper. Sparsely stiff hairy. Purple flowers. Large fruits have longitudinal grooves.

**Notes:** Root is edible

**CACTACEAE**

**Cactus Family**

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[www.friendsofsaguaro.org](http://www.friendsofsaguaro.org)



[www.cssma.org](http://www.cssma.org) and

**Opuntia spp. and Cholla spp.**

PRICKLY PEAR

**Habitat:** Escaped cultivation. Urban interfaces, roadsides, disturbed sites. Locally common along the fringes of the Mobile home parks and the Los Osos Oaks reserve.

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**Description:** Stems succulent. Covered in spines and glochids (tiny clustered spines). Fleshy stems conserve water. Easily dispersed by fragmentation.

## CARYOPHYLLACEAE

### Pink Family

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#### **Silene gallica**

SILENE

**Habitat:** Grasslands, roadsides, disturbed sites.

**Description:** Small annual forb. Plant has short stiff hairs or elongated bristles. Leaves become smaller from the base up. Flower buds have red streaks. Petal margins are lobed or notched.



[www.aphotoflora.com](http://www.aphotoflora.com)

#### **Stellaria media**

COMMON CHICKWEED

**Habitat:** Grasslands, wooded areas, roadsides, disturbed sites, urban interfaces, common in most yards. Escaped cultivation. Widespread.

**Description:** Small fleshy annual. Leaves are alternate and ovate (oval shaped). Wavy hairs at the internodes. Lanceolate white petals.

## CHENOPODIACEAE

### Goosefoot Family

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[WWW.BAYNATIVES.COM](http://WWW.BAYNATIVES.COM)

### **Atriplex lentiformis**

SALTBUSH

**Habitat:** Urban interfaces, restoration sites.

**Description:** Large shrub. Triangular leaves.

**Notes:** This species is native to California but is outside of its natural range here. It has been used locally as a plant in native restorations and landscaping, especially in and around Morro Bay.



[www.tncweeds.ucdavis.edu](http://www.tncweeds.ucdavis.edu)

### **Atriplex sembacatta**

AUSTRALIAN SALTBUSH



[www.bixby.org](http://www.bixby.org)

**Habitat:** Grasslands, roadsides, disturbed sites, coastal bluffs.

**Description:** Small grayish mound forming species. Pinkish stems. Silvery leaves have salt excretion glands, and dentate to crenulate (wavy) leaf margins.



### **Salsola tragus**

RUSSIAN THISTLE

**Habitat:** Disturbed sites, lots, fill dirt. There is a well established population at Estero Bluffs State Park property.

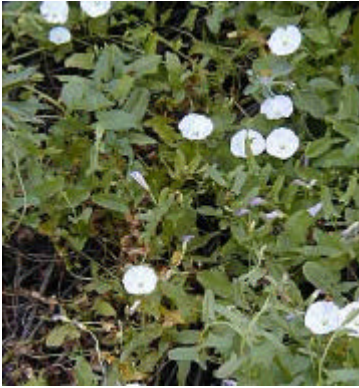
**Description:** An annual bushy species, it is highly branched with thick fleshy stems, often reddish in color. Small leaves are green, fleshy and spine tipped, becoming brown and stiff as they age. Petals are translucent, white and pinkish, winged. Bracts are spined.

**Notes:** *Salsola soda* has recently been reported from the Estero bay area as well.

## CONVOLVULACEAE

### Morning Glory Family

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#### **Convolvus arvensis**

BIND WEED

**Habitat:** Grasslands, disturbed sites.

**Description:** Prostrate perennial species. Vining or twinning. Leaf is ovate (egg shaped), with a rounded tip and a triangular leaf base (hastate). Leaves are a grey green. White to pinkish funnel shaped flower.



#### **Ipomoea sp.**

COMMON MORNING GLORY

**Habitat:** Urban areas, disturbed lots, riparian areas.

**Description:** Tough, perennial, woody vine. Climbs using tendrils. Large lobed leaves with rounded bases. May root at nodes. Large trumpet or

funnel shaped flower. Petals fused. Blue-purple, fading towards center. This vine will take over an area, smothering any plants in its path.

## DIPSACACAEAE

### Teasel Family

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#### **Dipsacus sativus**

TEASEL

**Habitat:** Open lots, disturbed lots, roadsides and grasslands.

**Description:** Tough leaves in pairs, fuse around stem. Inflorescence is egg or cylindrical shaped, sometimes appears cone like. Involucre bracts are unequal and hooked. Small flowers are funnel shaped. Inflorescence is subtended by tough, spine-tipped receptacle bracts.

**Notes:** Dried inflorescence (pictured above), were used by early settlers for carding wool.

## EUPHORBIACEAE

### Spurge Family

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#### ***Euphorbia lathyris***

GOPHER WEED

**Habitat:** Roadsides, disturbed sites. Locally common in moist sites. Seen here at Chorro Flats.

**Description:** Tall erect biennial. Lanceolate, blue-green leaves are tightly alternate around the main stem or branch. Midvein is whitish. A thick milky sap is produced when leaves or branches are torn. Bell-shaped with a crescent shaped gland. Round, ridged fruit.



#### ***Euphorbia peplus***

PETTY SPURGE

**Habitat:** Very widespread. Roadsides, disturbed sites. Common in gardens, urban-open space interfaces.

**Description:** Small annual species. Also has milky sap. Leaves are Common in yards, and wooded under stories. Leaves are glabrous

(lacking hairs) and slightly grayish. Ovate to obovate (oval or egg shaped). With a short petiole.



**Ricinus communis**

CASTOR BEAN

**Description:** Large shrub, sometimes tree-like. Stems reddish. Branched above. Large palmately lobed leaves (7-11 lobes per leaf), with toothed margins. Inflorescence is a spreading panicle and terminal (located at the top of the branch or stem. Separate male and female flowers. No petals, instead the red color of the inflorescence is the male and female parts. Large shiny seed is splotched or mottle and highly toxic.

**FABACEAE**

**Pea Family**



**Acacia spp.**

ACACIA

**Habitat:** Escaped cultivation, planted at old ranch sites.



**Description:** Tall tree. Large compound leaves (bipinnately compound). Fruit is a legume.



**Caragana arborescens**

SIBERIAN PEA TREE

**Habitat:** Escaped cultivation. Used in landscaping. Roadsides, moist areas in Chaparral,

**Description:** Tree. Compound leaves. Yellow clustered flowers. 9 of 10 filaments are fused. Fruit is oblong and flat.



[www.calflora.net](http://www.calflora.net)

**Genista monspeliensis**

FRENCH BROOM

**Habitat:** Under story in woodlands, urban interfaces, roadsides, disturbed sites.

**Description:** Woody shrub. Stems and lower leaflet surfaces have silky trichomes (hairs). Small, deciduous stipules subtend the leaves. 3 leaflets per leaf. As with many flowers in this family, the flowers are 2 lipped and

have banner and keel petals. Flowers also have fine silky hairs. The inflorescence is a cluster and occurs on side branches or shoots. This plant is highly invasive



### **Lotus corniculatus**

BIRD-FOOT TREEFOIL

**Description:** Perennial and decumbent (arises from a central stem and then arches downward to lay flat. Leaflets are grouped or arranged in a ray and generally gathered at the axil tips. Leaf is subtended by a gland-like stipule (leafy structure, reduced or absent in most plants). Compound flower head; 3 to 8 flowers per head. Tips of unopened flower buds are reddish in color. The fruit is dehiscent, meaning that it opens up and drops its seed when it dries out at maturity.



**Medicago polymorpha** [www.catnapin.com](http://www.catnapin.com) [www.catnapin.com](http://www.catnapin.com)

BUR-CLOVER

**Habitat:** Disturbed sites, roadsides, empty lots.

**Description:** Low growing annual species. Typically prostrate. This small plant has three rather heart-shaped leaflets per leaf, grouped together in a

fan-like cluster, subtended by stipules. The leaflets have slightly toothed margins. The yellow flowers are arranged into a raceme. Nine of the ten filaments (stalks that supports the anthers) are fused. The fruit is a follicle ,and is hypercoiled and armed with short hooked prickles. The prickles allow the seeds to become stuck in fur, socks, etc. They can be painful to the touch, but increase the dispersal success for this species tremendously.



### **Melilotus alba**

WHITE SWEET CLOVER

**Habitat:** Disturbed sites, roadsides, empty lots, dune swales in Morro Bay.

**Description:** Tall and erect to spreading. This large species has elongated leaflets, with slightly toothed margins. The central vein is slightly prominent, giving the leaflets a concaved or folded look. The inflorescence is a raceme of white flowers. Fruit has many visible lines. This plant has a light and sweet smell.



### **Melilotus indicus**

## SOURCLOVER

**Habitat:** Disturbed sites, roadsides, empty lots.

**Description:** Low growing annual species. Spreading. Leaflets are oblanceolate to wedge-shaped. Yellow flowers in a slender raceme. Fruit is bumpy. Also sweet smelling.



## *Trifolium campestre*

## HOP CLOVER

**Habitat:** Disturbed grasslands.

**Description:** There are many exotic *Trifolium* species. The two most commonly seen species have been included here. Annual. Leaves are pinnately compound and subtended by oval-like stipules. The midvein is prominent. The inflated looking flowers form a spherical or head-like inflorescence.



## *Trifolium hirtum*

## ROSE CLOVER

**Habitat:** Disturbed grasslands and roadsides.

**Description:** Annual and hairy. No basal leaves, all compound and cauline and subtended by bristle tipped stipules. Flowers are generally pink.



**Vicia spp.**

VETCH

**Habitat:** Disturbed sites, grasslands, riparian areas and roadsides.

**Description:** There are two commonly seen non-native *Vicia* species in the Estero Bay area. They are *V. staiivia* (common vetch) and *V. villosa* (hairy or winter vetch). They are both annuals. *V. staiivia* has truncated (flattened) and notched leaflet tips and its flowers are pink-purple to whitish and young fruits are often hairy. *V. villosa* is hairy (typically stiff, appressed hairs), has rounded leaflet tips, flowers that are violet to whitish and fruits are never hairy.

## GERANIACEAE

### Geranium Family

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#### **Erodium spp.**

FILAREE

**Habitat:** Grasslands and roadsides, open disturbed sites, and open lots. Common and widespread. *E. cicutarium* is the most widespread also occurring in coastal scrub and chaparral, while *E. botrys* is the more common of the three at dry sites.

**Description:** Three *Erodium* species are found locally. They are *E. botrys* (stork bill filaree), *E. cicutarium* (green stem filaree), and *E. moschatum* (red stem filaree). All three are low growing annuals. All three species have short hairs along the midveins of the leaves, opposite upper or cauline leaves, flowers arranged in umbels, and long skinny fruits which become tightly coiled when mature and dry. This coiling allows the fruit to act as a drill with changing temperature and moisture. When the fruit lands on the soil surface, it swells with moisture, and contracts with sunlight and heat. The swelling and contracting literally drills the fruit, tip first, into the soil. In general, these three species are most easily differentiated by leaf morphology and fruit size. *E. cicutarium* and *E. moschatum* both have compound lower leaves and one furrow surrounding the pits on the tip of the fruit. *E. cicutarium* has very highly dissected and lobed lower leaves, trichomes on the sepal tips and petal bases, and a shallow furrow. *E. moschatum* has toothed lower leaflets which are alternate below and opposite towards the apex of the leaf where they typically fuse. Leaves and flowering parts are non-hairy (glabrous), and the fruit pit is glandular. *E. botrys* is the larger of the three species and has deeply lobed, but not compound leaves, coarse hairs along the stem, and has a deep apical fruit pit and 2 deep furrows. The lower three photos are *E. botrys*. Note the lower left photo of the simple (not compound) lobed leaf.



### **Geranium dissectum**

GERANIUM

**Habitat:** Grasslands and roadsides, open disturbed sites, and open lots. Common.

**Description:** Slightly erect annual species. Rough hairs along stem, sometimes glandular above. Overall leaf outline is rounded however leaf is dissected with 5-7 major segments that are also lobed. Sepals are notched. Inflorescence is a cyme, flower is rose with purple, and the seed is pitted.



### **Geranium molle**

GERANIUM

**Habitat:** Riparian areas, shade near fresh water, grasslands, roadsides, open disturbed sites, shaded areas, and open lots. Common.

**Description:** Annual erect to arching downward. Smaller than *G. dissectum*, and softer hairs. The overall leaf shape is rounded and has rounded lobes. Inflorescence is a cyme, flower is red-purple, and seed is smooth.

## LAMIACEAE

### Mint Family

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### **Marrubium vulgare**

#### HOREHOUND

**Habitat:** Grasslands and roadsides, open disturbed sites, coastal scrub, and open lots. Common. Often associated with open areas near horse corrals.

**Description:** Typical of this plant family, this perennial shrubby species has square stems, opposite leaves, and a vertical inflorescence (flowers arranged around the stem in stacks). It is a pubescent (hairy) plant. The rounded and petioled leaves are tomatoes, they have crenate margins (Small, rounded bumps or lobes along the margin), and the surfaces are bumpy textured.



## MALVACEAE

### Mallow Family

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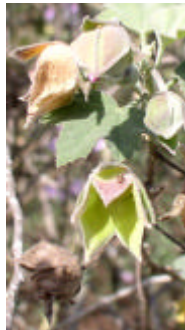


#### **Malva spp.**

MALLOW, CHEESEWEED

**Habitat:** Roadsides, open disturbed sites. Common in yards and open lots.

**Description:** *Malva negelecta* and *Malva parviflora* are two common mallow species in the area. Low growing and tends to form mounds. Leaves are generally rounded with crenate margins. Flowers are light pinkish, violet, sometimes almost whitish.



#### **Lavatera assurgentiflora**

TREE MALLOW

**Habitat:** Native to the Channel Islands. Mostly used in landscaping.

**Description:** Large woody shrub is tree-like, but not rigid. The main difference between this species and a non-Californian species (*L. arborea*) is in the tip of the bractlets (they subtend the flower and ultimately the

fruit). The bractlet tips of this Channel Island native are pointed and slightly elongated while those of *L. arboreus* are rounded, the flowers are also larger.

## MORACEAE

### Mulberry Family

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[www1.lfl.cuni.cz](http://www1.lfl.cuni.cz)

#### **Ficus carica**

FIG TREE

**Habitat:** Roadsides, developed areas, ranch sites, landscaping.

**Description:** Shrub to tree. Leaves are palmately lobed. Lower leaf surface hairy.

## MYOPORACEAE

### Myoporum Family

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#### **Myoporum laetum**

#### MYOPORUM

**Habitat:** Roadsides, open disturbed sites, developed areas, urban interfaces, campgrounds.

**Description:** Large shrub-tree. Large lanceolate - elliptic leaves are alternate and have submerged or dotted glands, and many are finely serrated along the margins. New leaves may feel sticky. White flowers and rounded fruits. This species spreads quickly, grows fast and can ultimately form a sizable patch or stand.

# MYRTACEAE

## Bottlebrush Family

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### **Eucalyptus globulus**

#### BLUE GUM

**Description:** Tall trees with distinctly shredded bark. The blue/green leaves are long and slender and slightly sickle shaped. The *Eucalyptus globulus* (Blue gum) has been planted throughout California for its ability to grow fast. Native to Australia, this species got its introduction into California as an ornamental. The presence of allelopathic chemicals in the leaf litter can cause destruction to the presence and establishment of native floral communities. Consequently, this causes severe habitat loss for vertebrates and invertebrates alike.

The under story species are greatly impacted by the accumulation of leaf litter and shedding bark, and decreased sunlight. Because of the presence of volatile oils found in the leaf litter large stands of this species present a fire danger. Fires that also involve blue gum cause increase the intensity and duration of such fires.

This species has also been shown to have severe impacts on fresh water communities. Aside for the rapid uptake of water by the roots, leaf litter and bark accumulation in the water can cause extremely anaerobic conditions.

**Recommended treatment:** Control of this species has included felling of trees and subsequent spraying of stumps to inhibit stump re-sprout. This practice has been very successful to date.

## OXADILACEAE

### Oxalis Family

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#### **Oxalis pes-caprae**

SOUR CLOVER, BERMUDA BUTTERCUP

**Habitat:** Roadsides, open disturbed sites, developed areas, urban interfaces, campgrounds, grasslands, lots.

**Description:** Bulbiferous. Brown bulb forms white bulblets. Compound heart-shaped leaflets, fleshy stems and petioles. Inflorescence is a loose umbel of bright yellow flowers.

## PLANTAGINACEAE

### Plantain Family

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#### **Plantago coronopus**

**Habitat:** Roadsides and open disturbed sites on or near coastal bluffs.

**Description:** Small fleshy leaves are basally arising. They have acutely tipped lobes and coarse hairs. Long spike of tiny flowers.



**Plantago lanceolata**

ENGLISH PLANTAIN

**Habitat:** Roadsides and open disturbed sites on or near coastal bluffs.

**Description:** Leaves arise from base. Linear to lanceolate, veins appearing parallel, margin finely toothed or dentate. Inflorescence is a terminal spike, maturing from the bottom up. Anthers protruding.



**Plantago major**

WIDELEAF PLANTAIN

**Habitat:** Grasslands, roadsides, disturbed sites, occasionally in riparian corridors, and coastal bluffs.

**Description:** Basal leaves are wide and elliptic. Stout annual. Elongated spike of flowers.

# POLYGONACEAE

## Buckwheat Family

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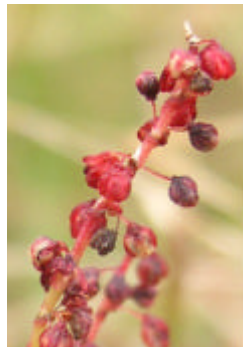
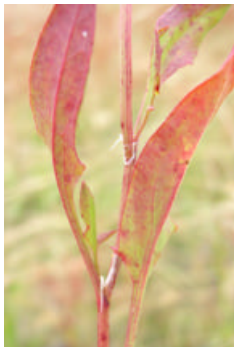


### **Rumex crispus**

CURLY DOCK

**Habitat:** Grasslands, roadsides, disturbed sites, coastal bluffs. Widespread.

**Description:** Leaves are lanceolate. Dense or tight panicle of gathered or clustered flowers subtended by bracts.



### **Rumex acetocella**

SOUR DOCK, SHEEP SORREL

**Habitat:** Grasslands and moist sites.

**Description:** A small, annual species. Spreads by rhizome, forming large patches. Leaves are angled at the bottom (appearing spear-like with angled downward and pointed tips at base of leaf). Dioecious (separate male and female plants). Loose, open panicle of flowers.

## PRIMULACEAE

### Primrose Family

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#### **Anagallis arvensis**

SCARLET PIMPERNEL

**Habitat:** Disturbed sites, yards, urban interfaces. Very common and widespread.

**Description:** Low growing, smooth, small annual. Leaves lack petioles (sessile) and are slightly egg shaped. Peach colored petals with red-pink, purple and white in the center.

## ROSACEAE

### Rose Family

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#### **Rubus discolor**

HYMILIAN BLACKBERRY

**Description:** Large shrubby vine forms patches or stands. Unlike the native *R. ursinus*, this species has a 5-angled stem. Lower leaflet surface sometimes pubescent below. Leaves compound. White to pinkish flower.



## SCROPHULARIACEAE

### Figwort Family

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#### **Bellardia trixago**

BELLARDIA

**Habitat:** Locally seen in disturbed grasslands and moist sites.

**Description:** Stem is erect. Entire but slightly open, plant covered in gland-tipped hairs. Inflorescence is a tight raceme, sometimes appearing spike like. Leaves are basal and cauline; Flowers are 2-lipped (upper lip is much smaller than the lower lip), 4 lobed.; white petaled lower lip, white-to light purple upper lip.

## SOLANACEAE

### Nightshade Family

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#### **Datura stramonium**

JIMSON WEED

**Habitat:** Disturbed sites and roadsides.

**Description:** This species has erect that slightly spread with maturity. Leaves are lobed and toothed. Light colored tube to funnel shaped flower. The large fruit has thick, “soft” prickles.



*Nicotiana glauca*

TREE TOBACCO

**Description:** Large shrub to small tree sized. Blue-green (glaucous) colored leaves are large and egg shaped. Yellow tube-like flowers.

## TAMARICACEAE

### Salt Cedar/Tamarisk Family

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*Tamarix* spp.

TAMARISK

**Habitat:** Scattered here. Typically associated with old ranch sites. It is, however, highly invasive and has been known to destroy riparian systems.

**Description:** Large shrub to tall trees. The scale or awl like overlapping leaves have salt excretion glands. Large panicles of tiny pink flowers.

## TROPAEOLUM

### Nasturtium Family

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[www.ingibjorg.is](http://www.ingibjorg.is)



[www.geo.ya.com/](http://www.geo.ya.com/)

### **Tropaeolum majus**

GARDEN NASTURTIUM

**Habitat:** Disturbed sites, gardens, open areas with shade, urban interfaces, landscaping. Very common.

**Description:** Ground dwelling vine. Roots at the nodes. Fleshy green stems. Twining petioles. Simple leaves are alternate along the stem and peltate. Pedicel of large orange bilateral flowers. Petal claws (base) are slender. Has a nectar spur.

## URTICACEAE

### Nettle Family

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#### ***Urtica urens***

#### STINGING NETTLE

**Habitat:** Widespread. Riparian areas, yards, urban interfaces, open shaded lots, garden beds.

**Description:** Annual species. Entire plant is covered with stinging hairs. Leaves are opposite, ovate-cordate and have toothed margins. Inflorescence is a head of separate male and female flowers (monecious).

# Monocots

## AGAVACEAE (LILACEAE)

### Agave Family

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#### **Agave sp.**

CENTUARY PLANT

**Habitat:** Escaped landscaping plant. Urban interfaces. Seen here in Montana de Oro State Park.

**Description:** While there are three *Agave* species native to California, none of them are native to the Estero bay area. They tend to spread vegetatively through the growth of the caudex and side shoots. The leaves form a basal rosette. They are sessile, grey-green and strongly tooth. Teeth are spine tipped. Inflorescence is a raceme or a panicle of large off white to cream colored and fleshy.

## ALOEACEAE

### Aloe Family

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#### Aloe sp.

ALOE

**Habitat:** Escaped landscaping plant. Urban interfaces. Seen here in Montana de Oro State Park.

**Description:** Very large, shrub looking species. Branching. Leaves are fleshy, and succulent, sessile, margins are toothed. Influence is a tall spike of tube-like orange flowers.

## ARACEAE

### Arum Family

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[www.classiccalla.com](http://www.classiccalla.com)

[www.bbc.co.uk](http://www.bbc.co.uk)

#### Zantedeschia aethiopica

CALA LILLY

**Habitat:** Escaped landscaping plant. Urban interfaces. Near streams or moist soil.

**Description:** Perennial. Spreads from rhizomes, forming patches. Large basal leaves with wavy (undulated) margins. Large white bract subtends an elongated spike of male and female flowers.

## CYPERACEAE

### Sedge Family

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#### **Cyperus involucratus**

SEDGE

**Habitat:** Escaped landscaping plant. Urban interfaces. Along stream banks or in moist soil.

**Description:** Basal leaves. Long strap shaped, and finely serrated along the margins. Spreading clusters of gathered spikelets. Readily hybridizes with native species.

## IRIDACEAE

### Iris Family

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***Crocosima crocosmiiflora***

RED FLAG IRIS

**Habitat:** Escaped landscaping plant. Urban interfaces. Along stream banks or in moist soil, in shade. Spreads into large patches. Excluding all other plants in the area.

**Description:** Perennial; underground corms. Covered with brown fibers. Long lanceolate to strap-shaped leaves have a prominent mid-rib. Inflorescence is a panicle of tube to funnel shaped red and orange flowers. To remove this species, you need to completely remove the corms from the soil.

## LILACEAE

### Lily Family

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***Asphodelus fistulosus***

ASPHODEL



**Habitat:** Roadsides. Escaped landscaping plant. Urban interfaces. Forms large patches.

**Description:** Annual, clump forming. Green sub-cylindrical leaves are fleshy. Panicle of white to pinkish flowers. Fruits are red berries.

## POACEAE

### Grass Family

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#### A word about non-native grasses

The proliferation of non-native grass species has greatly impacted the landscape of California. The hillsides of California were once covered by perennial bunch grasses and wildflowers. Now they are overrun by non-native species, more tolerant of grazing pressures and repeated disturbance. Most non-native grass species are annual species that are prolific seeders or spread quickly by rhizomes or stolons.



#### ***Ammophila arenaria***

##### EUROPEAN BEACH GRASS

**Description:** *Ammophila arenaria* is a perennial, rhizomatous grass and is highly invasive in coastal dunes. It spreads solely by vegetative means, the rhizomes, which can tolerate up to three feet of burial in the sand. It is a clumped grass with long, strap shaped leaves and acute tips. The inflorescence is a dense spike-like panicle with long sub-sessile spikelets and the seeds are infertile.

**Notes:** This aggressively spreading grass was first planted along the California coast near San Francisco to stabilize dunes in 1869 and has since spread south to San Diego and north into British Columbia.

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*Ammophila arenaria* thrives in the unstabilized/fore dunes and readily displaces the native vegetation, decreasing both plant and arthropod species diversity (Bossard et al, 2000) and decreases vital nesting habitat for the Western Snowy Plover. *A. arenaria* also effects the natural formation of the sand dunes which usually form perpendicular to the shoreline. Where European beach grass has invaded dunes tend to form parallel to the coast, altering the natural topography of the shoreline which has echoing effects on the natural hydrology of the dune habitats.

**Recommended treatment:** Through experimental trials, persistent chemical treatment and re-treatment with herbicide has produced acceptable results. Re-treatment consists of spraying new growth from dead mats and newly infested foredune areas approximately 3-4 times a year. Re-treatment efforts decrease over time until the complete elimination of a given population. Some agencies have found it helpful to used controlled burns to cut back the vegetative materials before treatment with herbicides as a means of decreasing the amount of biomass to be sprayed.



## **Arundo donax**

### GIANT REED

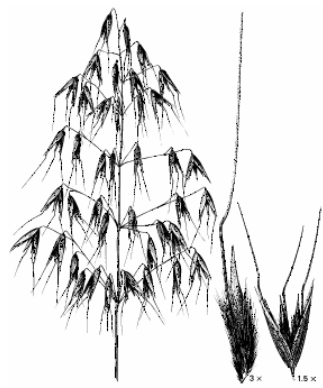
**Description:** Large stands. Looks like bamboo or cane. Erect, cauline leaves are sheathed. Takes over riparian areas, completely displacing native vegetation and depleting the water table.



[polyland.calpoly.edu](http://polyland.calpoly.edu)  
[www.csupomona.edu](http://www.csupomona.edu)

[www.natur-lexikon.com](http://www.natur-lexikon.com)

### **Avena barbata**



[www.csupomona.edu](http://www.csupomona.edu)

[www.atlas-roslin.pl](http://www.atlas-roslin.pl)

[www.viarural.com](http://www.viarural.com).

### **Avena fatua**

#### **WILD OATS**

**Description:** Common and widespread. Annuals with an open panicle.



**Bromus diandrus**

RIPGUT BROME

**Description:** Annual grass. Elongated compressed spikelets have short stiff hairs that catch on fur of textiles.



**Bromus hordeaceus**

SOFT-CHESS BROME

**Description:** Annual grass. Inflorescence is a raceme. Spikelets are covered in soft trichomes.



**Bromus madritensis**

RED BROME

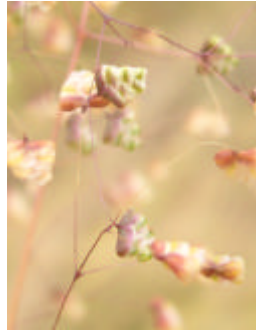
**Description:** Annual. Widespread and aggressive. Terminal inflorescence of upward pointing spikelets.



**Briza maxima**

RATTLE SNAKE GRASS

**Description:** Annual bunch grass. Nodding spikelets resemble a rattle on a rattlesnake.



## **Briza minor**

### LITTLE QUAKING GRASS

**Description:** Annual bunch grass. Much smaller than *B. maxima*. Delicately nodding panicles of spikelets. Spikelets resemble tiny rattlesnake rattles.



## **Cortaderia jubata and Cortaderia selloana**

### JUBATA and PAMPAS GRASS

**Description:** While both of the *Cortaderia* species are highly invasive *C. jubata* produces viable seeds while *C. selloana* does not. *C. jubata* and *C. selloana* also vary slightly in morphology but are both invasive perennial bunch grasses that were introduced to California from South America. It occurs along coastal California, thriving on disturbed areas in the fog belt but does not penetrate inland areas. *C. jubata* range from 2-8 meters tall, has long deep green leaves, purple spikelets, and its florets extend beyond the hairs. *Cortaderia selloana* only produces viable seeds when both male and female plants are present. *C. selloana* was introduced in 1848 as an ornamental. It was planted extensively throughout Los Angeles and Ventura counties in 1946 to provide erosion control and dry land forage. While *C. selloana* occurs along the coast of California, it reaches farther

south and has dispersed inland, unlike *C. jubata*. *C. selloana* grows between 2-11 meters tall, has glaucous green leaves that are bristly and curled at the tips. Spikelets are whitish (males are often light purple at the base) and their awns are twice as long as the hairs. Note the ground covered in seeds in the far right photo.

**Recommended Treatment:** The larger individuals should be sprayed 2-3 times with herbicide and smaller plants can be hand pulled with sharp shovels. When hand pulling pampas grass, all roots must be removed. Repeated treatments of herbicide are necessary for large individuals, as re-sprouting occurs. Removal or treatment before seeding is critical.



### **Cynodon dactylon**

BERMUDA GRASS

**Description:** Perennial, spreading. Roots at the nodes. Very aggressive, carpeting an area and choking out surrounding plants.



**Ehrharta calycina**

ucce.ucdavis.edu



[www.sfwma.org](http://www.sfwma.org)

[www.esc.nsw.gov.au](http://www.esc.nsw.gov.au)

[en.wikipedia.org/wiki](http://en.wikipedia.org/wiki)

ucce.ucdavis.edu

**Ehrharta erecta**

VELDT GRASS

**Habitat:** Grasslands, disturbed sites, trail edges, coastal scrub. Invasive in most plant communities. Particularly threatens baywood fine sands soil communities.

**Description:** Perennial bunch grass. Reddish color. Panicle-like inflorescence with spreading and branched spikelets. Highly invasive. *E. calycina* has short soft hairs and short awns. *E. erecta* does not have hairs or awns. Occupies more area here than in its native area, South Africa. This is the widespread grass that has devastated the Baywood fine sands and active dunes of Montana de Oro State park. Presently, the grass has been found spreading north to Morro bay State Park along Lower State Park Road, two patches at Morro Strand State Beach, and two patches on state property near Harmony. Only due diligence will prevent this weed from over-running additional state park lands.





**Lamarckian area**

**GOLDEN TOPS**

**Habitat:** Grasslands, disturbed sites, can tolerate rocky soils.

**Description:** Short annual species. Elongated spikelets are soft and spreading. Purple to white-golden in color.



**Folium multiform**

**WILD RYE**

**Habitat:** Grasslands, disturbed sites, trail edges, roadsides.

**Description:** Annual. Erect. Inflorescence is an open spike with alternating spikelets.



**Pennisetum clandestinum**

KUKUYU GRASS

**Habitat:** Grasslands, disturbed sites, trail edges, moist areas.

**Description:** Perennial. Prostrate, spreading. Stolons. Inflorescence is enclosed in a sheath.



**Pennisetum setaceum**

FOUNTAIN GRASS

**Habitat:** Grasslands, disturbed sites, trail edges, moist areas.

**Description:** Perennial. Clump forming. Thin and narrow basal leaves. Purple inflorescence is airy.



**Phalaris sp.**

**Habitat:** Grasslands, disturbed sites, trail edges, moist areas communities

**Description:** Tall, erect clump forming annual. Tall, cylindrical inflorescence is terminal.



**Polypogon sp.**

RABBIT'S FOOT GRASS

**Habitat:** Grasslands, disturbed sites, trail edges, moist areas.

**Description:** Low growing, clump forming. Inflorescence is terminal and fuzzy.

**Table 1. Exotic Plant Species of Estero Bay Area Wild Lands**

<b>GYMNOSPERMS</b>	
<b>Cupressaceae</b>	
<i>Cupressus macrocarpa</i>	Monterey cypress
<b>Pinaceae</b>	
<i>Pinus radiata</i>	Monterey pine
<b>DICOTS</b>	
<b>Aizoaceae</b>	
<i>Carpobrotus chilensis</i>	Iceplant
<i>Carpobrotus edulis</i>	Iceplant
<i>Conicosia pugioniformis</i>	Slender-leaf iceplant
<i>Tetragonia tetragonioides</i>	New Zealand spinach
<b>Apiaceae</b>	
<i>Anethum graveolens</i>	Dill
<i>Cardaria draba</i>	Hoary cress
<i>Conium maculatum</i>	Poison hemlock
<i>Daucus sp.</i>	Wild celery
<i>Eryngium armatum</i>	Coyote thistle
<i>Foeniculum vulgare</i>	Fennel
<i>Torilis arvensis</i>	
<b>Apocynaceae</b>	
<i>Vinca major</i>	Greater Periwinkle
<b>Araliaceae</b>	
<i>Hedera helix</i>	English Ivy
<b>Asteraceae</b>	
<i>Anthemis cotula</i>	Mayweed
<i>Carduus pycnocephalus</i>	Italian thistle
<i>Carthamus lanatus</i>	Distaff thistle
<i>Centaurea melitensis</i>	Tocalote

<i>Centaurea solostitialis</i>	Yellow star thistle
<i>Chamomilla suaveolens</i>	Pineapple weed
<i>Cirsium vulgare</i>	Bull thistle
<i>Cotula coronopifolia</i>	Brass buttons
<i>Gazania linearis</i>	Gazania
<i>Gnaphalium leuto-album</i>	Cud weed
<i>Hedypnois cretica</i>	Crete weed
<i>Hypochaeris glabra/radicata</i>	Hypochaeris
<i>Lactuca saligna</i>	Wild lettuce
<i>Lactuca serriola</i>	Prickly wild lettuce
<i>Leontodon taraxacoides</i>	Hawkbit
<i>Picris echioides</i>	Bristly ox-tounge
<i>Senecio mikanoides</i>	Cape- Ivy
<i>Silybum marianum</i>	Milk thistle
<i>Sonchus asper asper</i>	Prickly Sow Thistle
<i>Sonchus oleraceus</i>	Common sow thistle
<b>Boraginaceae</b>	
<i>Lithospermum arvense</i>	Stoneseed
<b>Brassicaceae</b>	
<i>Brassica nigra</i>	Black mustard
<i>Brassica rapa</i>	Field mustard
<i>Cakile maritima</i>	Sea rocket
<i>Hirschfeldia incana</i>	Perennial mustard
<i>Lobularia maritima</i>	Sweet alyssum
<i>Raphanus sativus</i>	Wild radish
<i>Rorippa-nasturtium aquatica</i>	Watercress
<b>Cactaceae</b>	
<i>Opuntia sp.</i>	Prickley pear
<b>Caryophyllaceae</b>	
<i>Silene gallica</i>	Field Champion

<i>Spergularia rubra</i>	Spergularia
<i>Stellaria media</i>	Common chickweed
<b>Chenopodiaceae</b>	
<i>Atriplex semibaccata</i>	Australian saltbush
<i>Salsola tragus</i>	Russian thistle
<b>Convolvulaceae</b>	
<i>Convolvulus arvensis</i>	Bindweed
<i>Calstegia longipes</i>	Morning glory
<b>Dipsacaceae</b>	
<i>Dipsacus sativus</i>	Teasel
<b>Euphorbiaceae</b>	
<i>Euphorbia esula</i>	Gopher weed
<i>Ricinus communis</i>	Castor bean
<b>Fabaceae</b>	
<i>Caragana arborescens</i>	Siberian pea tree
<i>Genista monspessulana</i>	French broom
<i>Lathyrus odoratus</i>	Sweet pea
<i>Lotus corniculatus</i>	Bird's foot treefoil
<i>Medicago polymorpha</i>	California burclover
<i>Melilotus alba</i>	Sweet clover
<i>Melilotus indica</i>	Yellow sweet clover
<i>Trifolium angustifolium</i>	
<i>Trifolium hirtum</i>	Rose clover
<i>Vicia sativa</i>	Common vetch
<i>Vicia villosa</i>	Hairy vetch
<b>Geraniaceae</b>	
<i>Eriodium botrys</i>	Stork-bill filaree
<i>Eriodium cicutarium</i>	Green-stem filaree
<i>Eriodium moschatum</i>	Red-stem filaree
<i>Geranium dissectum</i>	Dissected geranium

<b>Lamiaceae</b>	
<i>Marrubium vulgare</i>	Common horehound
<b>Malvaceae</b>	
<i>Malva parviflora</i>	Cheeseweed
<b>Moraceae</b>	
<i>Ficus carica</i>	Fig tree
<b>Myoporaceae</b>	
<i>Myoporum leatum</i>	Myoporum
<b>Myrtaceae</b>	
<i>Eucalyptus globulus</i>	Blue Gum
<b>Oxalidaceae</b>	
<i>Oxalis corniculata</i>	Sour-grass
<i>Oxalis pes-caprae</i>	Sour-grass
<b>Plantaginaceae</b>	
<i>Plantago coronopus</i>	Cut-leaf plantain
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	Plantain
<b>Primulaceae</b>	
<i>Anagallis arvensis</i>	Scarlet pimpernel
<b>Polygonaceae</b>	
<i>Rumex acetosella</i>	Sheep sorrel
<i>Rumex crispus</i>	Curly dock
<b>Scrophulariaceae</b>	
<i>Bellardia trixago</i>	
<b>Solanaceae</b>	
<i>Datura stramonium</i>	
<i>Nicotiana glauca</i>	Tree tobacco
<b>Tamaricaceae</b>	
<i>Tamarix parviflora</i>	Tamarisk
<i>Tamarix ramosissima</i>	Tamarisk

<b>Tropaeolaceae</b>	
<i>Tropaeolum majus</i>	Garden nastertium
<b>MONOCOTS</b>	
<b>Araceae</b>	
<i>Zantedeschia aethiopica</i>	Calla lily
<b>Iridaceae</b>	
<i>Crocossima crocosmiiflora</i>	Crocossima
<i>Freesia alba</i>	Freesia
<i>Gladiolus italicus</i>	Gladiolus
<i>Iris missouriensis</i>	Exotic Iris
<b>Liliaceae</b>	
<i>Asphodelus fistulosus</i>	Asphodel
<b>Pontederiaceae</b>	
<i>Eichhorina crassipes</i>	Water hyacinth
<b><u>Rushes/Sedges</u></b>	
<b>Cyperaceae</b>	
<i>Cyperus involucrata</i>	Sedge
<b><u>Grasses</u></b>	
<b>Poaceae</b>	
<i>Aira caryophyllea</i>	Hair grass
<i>Ammophila arenaria</i>	European beach grass
<i>Arundo donax</i>	Giant Reed
<i>Avena barbata</i>	Slender wild oats
<i>Avena fatua</i>	Common wid oats
<i>Brachypodium distachyon</i>	False brome
<i>Briza maxima</i>	Rattlesnake grass
<i>Briza minor</i>	Little quaking grass
<i>Bromus diandrus</i>	Rip-gut brome



<i>Bromus hordeaceus</i>	Soft-chess brome
<i>Bromus madritensis rubens</i>	Red brome
<i>Cortaderia jubata</i>	Pampas grass
<i>Cortaderia selloana</i>	Pampas grass
<i>Cynodon dactylon</i>	Bermuda grass
<i>Erharta calycina</i>	Veldt grass
<i>Erharta erecta</i>	Veldt grass
<i>Hordeum jubatum</i>	Foxtail barley
<i>Hordeum murianum</i>	Mediterranean barley
<i>Lamarckia aurea</i>	Goldentop
<i>Lolium multiflorum</i>	Italian ryegrass
<i>Paspalum dilatatum</i>	Dallisgrass
<i>Pennisetum clandestinum</i>	Kikuyu grass
<i>Pennisetum setaceum</i>	Fountain-top grass
<i>Phalaris aquatica</i>	Harding grass
<i>Phragmites australis</i>	Smilo grass
<i>Poa sp.</i>	Poa
<i>Polypogon monspeliensis</i>	Rabbit's foot grass