



Canyon Habitat Restoration 101 Manual

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1. Introduction

What is habitat restoration and why is it important?

Restoration can be broadly defined as the act, process, or result of returning a degraded or former habitat to a healthy, self-sustaining condition that resembles as closely as possible its pre-disturbed state. Part of San Diego Canyonlands' mission is to promote, protect and restore the natural habitats in San Diego County's canyons and creeks. It is important to protect and restore these natural habitats, because these areas of open space are like mini-regional parks in our back yards. They play an important role in our wellness through filtration of air and water, serving as our City's kidneys & lungs. These natural habitats are also home to much of San Diego's native biodiversity, many of which are threatened or endangered.

Many projects involve multiple types of restoration and focus on improving the health of whole ecosystems. Habitat restoration specifically entails removing weedy species and replacing them with plants that have evolved to, or are "native" to, a particular region. Since these plants have evolved and belong in a particular region, they are of utmost importance to the wildlife living there for sources of food, nests and shelter. Native plants serve the general ecological processes for the web of life and the food chain including soils and soil organisms, lichen, plants, insects, mammals, birds, reptiles and sometimes fish.

Why should we care about restoring our canyons?

Wildlife. Canyons harbor wildlife and endangered or threatened species - those that are approaching extinction. In San Diego County, we have more endangered and threatened species than any other county in the continental USA. Restoring canyon habitats helps the wildlife survive in a world where the habitat they need is vastly reduced and shrinking as urbanization continues.

Water Quality. Canyons also contain "riparian wetlands," which are an important part of our watersheds. Water naturally drains through the canyons when it rains and is also funneled through the canyons from our streets via storm drains. Healthy wetlands have dense, native vegetation with deep root systems that serve to slow down and absorb storm water runoff like a sponge. This function is important for many ecological reasons. Wetlands are natural filters for water running off land and off of our streets, removing pollutants before they reach our rivers, ponds, lakes, bays and oceans. Because wetlands can slow down the storm water, they provide protection from land erosion and reduce downstream flooding. Unfortunately, only 10% of wetlands still remain in Southern California due to urban development and other habitat disturbance.

Access to Nature. Citizens throughout San Diego are forming "friends groups" for canyons and working to "take back" these neglected open spaces, making them healthy, safe, enjoyable places to visit nature, hike, jog, or walk the dog. Access to nature is valuable to our physical and mental health; studies show that it is especially important to youth in their formative years.

How can San Diego Canyonlands help?

San Diego Canyonlands' programs can assist community members and groups like you who are interested in canyon habitat restoration in a variety of ways. We can assist you with "Friends Group" building to build volunteer stewardship of your canyon (see our [Friends Group Handbook](#)) and provide custom maps of your canyon that depict public/private ownership, sewer and other infrastructure, habitat quality, trails, and other existing conditions of your canyon to aid your project planning. We can also provide tools during your project events and assist with grant administration to fund your projects. We also help liaise with managing authorities (e.g. rangers) and introduce you to other community members who have success with restoring their own neighborhood canyon. Finally, our [Canyon Enhancement Planning \(CEP\)](#) program can assist with planning, permitting, and other comprehensive planning steps that your canyon project might require.

2. Restoration Safety Issues

For a variety of reasons, it is extremely important to exercise caution when in a canyon. You should be aware of encampments, sewer spills, sharp debris (including needles and broken glass), steep hillsides, potentially dangerous plants (cactus, poison oak), swarming insects (bees, wasps), parasites (ticks), and venomous rattlesnakes. For all of these reasons, one must be aware of their surroundings in the canyons using all the senses to detect any dangers. Always wear appropriate clothing. In particular wear sturdy closed-toe shoes, preferably with good ankle support. Other suggested gear includes sunscreen and hats for sun protection and long pants to protect against scrapes from shrubs. However, wearing long pants may not be suitable on hot days.

In general, one can increase safety by simply staying away or moving away from these dangers. **Click here** for a list of safety tips for canyon events.

Sewer spills and encampments can be addressed by informing the appropriate authority.

To Report:

Sewer Leak/Spill and Burst Water Line Hotline (Metro Wastewater Dept): 619-515-3525

Homeless Encampments: Open Space Rangers at (619) 235-5262 or call your local community police.

3. Native Canyon Plants

Here is a list and corresponding photos of native plant species typically found in San Diego's Canyons. Note: Choice of plants for restoration projects in San Diego is covered in another section of this manual.





Black Sage (*Salvia mellifera*)



White Sage (*Salvia apiana*)



Lemonadeberry (*Rhus integrifolia*)



Laurel Sumac (*Malosma laurina*)

California Sunflower (*Encelia californica*)



San Diego Sunflower (*Viguiera lacinata*)



Coastal Prickly Pear (*Opuntia littoralis*)



Bush Mallow
Malacothamnus fasciculatus

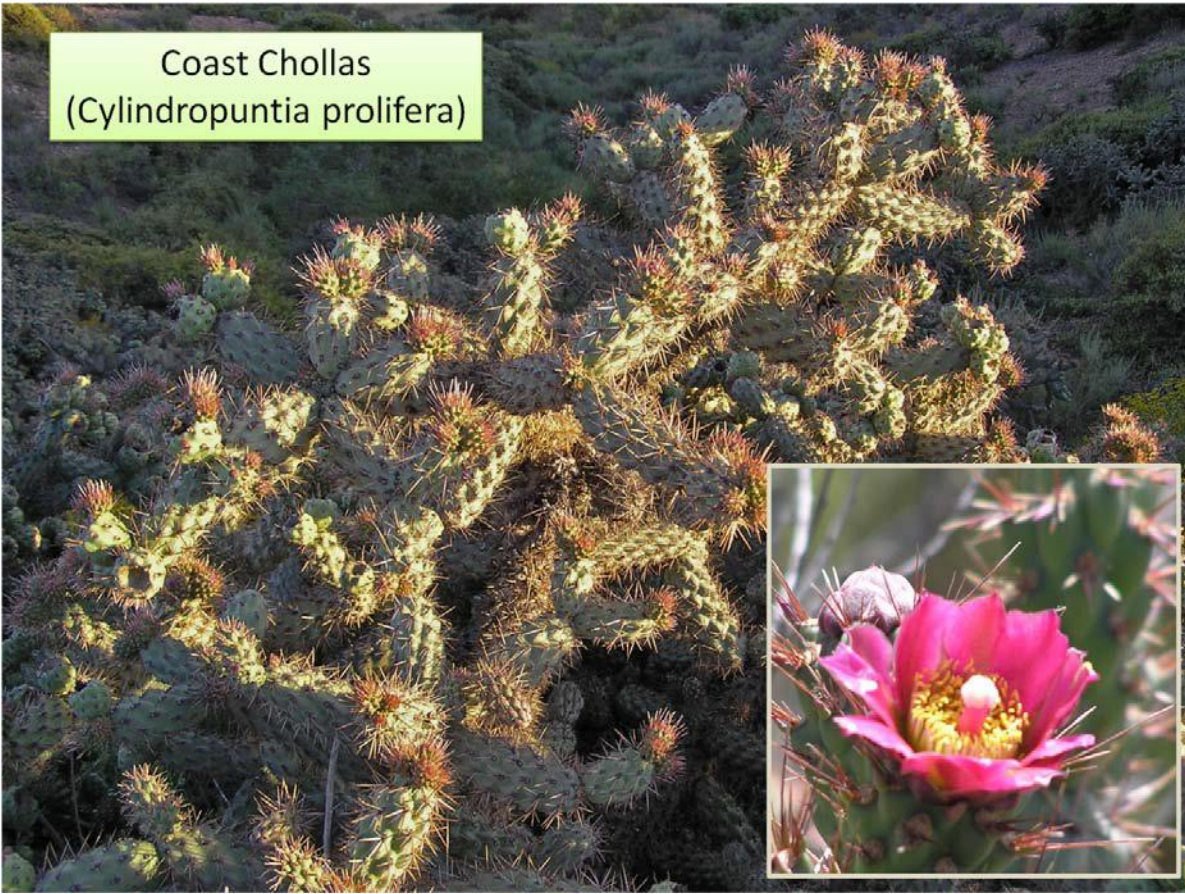
Mule Fat (*Baccharis salisifolia*)



Arroyo Willow (*Salix lasiolepis*)



Coast Chollas
(*Cylindropuntia prolifera*)



Coast Barrel Cactus
Ferocactus viridescens



Coast Scrub Oak (*Quercus berberidifolia*)



Native plants to be aware of include:

Poison Oak

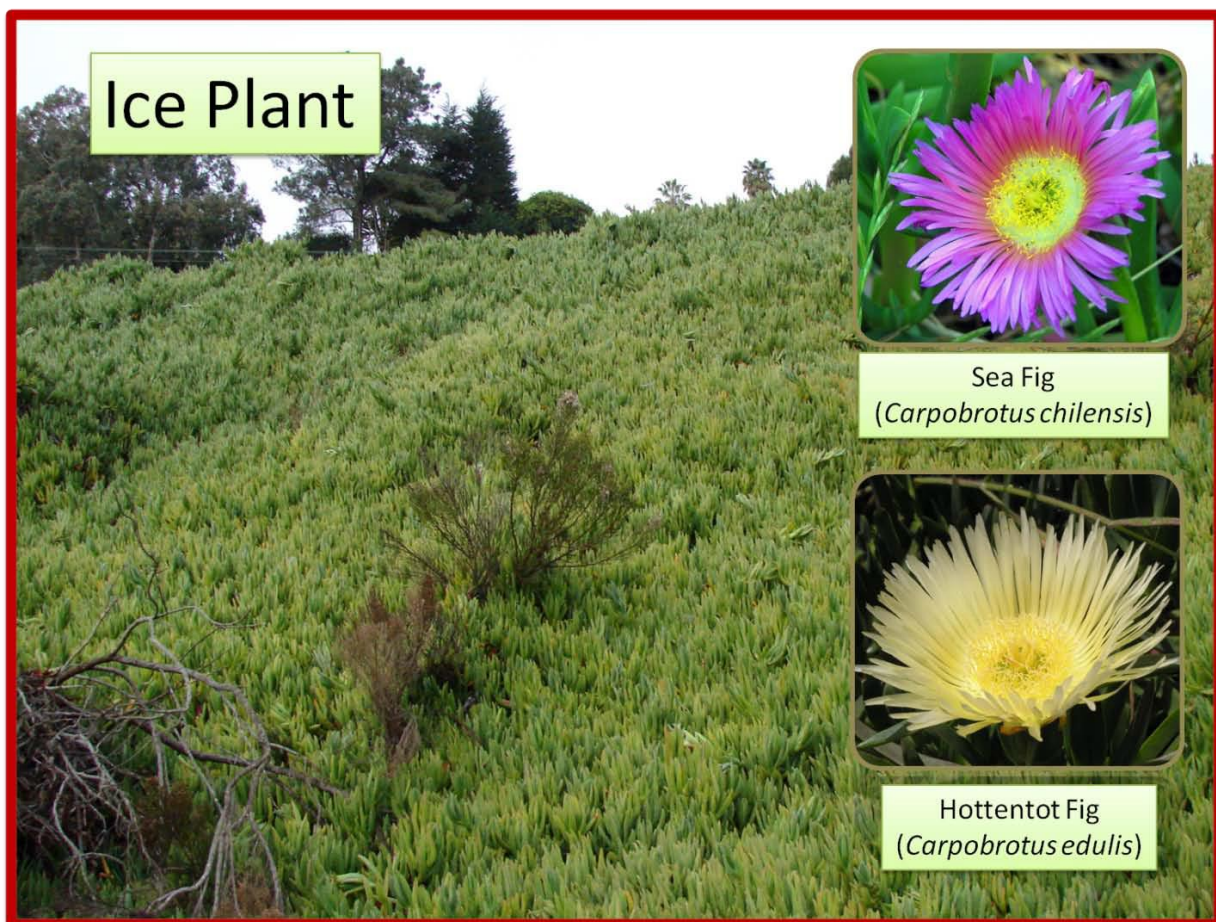


4. Non-Native (& Invasive) Canyon Plants

Before we begin to plant native species, we must first deal with the non-native plants. Some non-native plants are classified as “invasive species” meaning they aggressively take over territory and displace native plants. Here are the names and photos of the most common *non-native* plants to be aware of.

Note: For further information about native and non-native plants in San Diego, you can use the San Diego Plant Atlas. The San Diego Plant Atlas was created by the San Diego Natural History Museum as a resource to anybody interested in the plants of San Diego County.

Note: Photos outlined in red are considered invasive species.



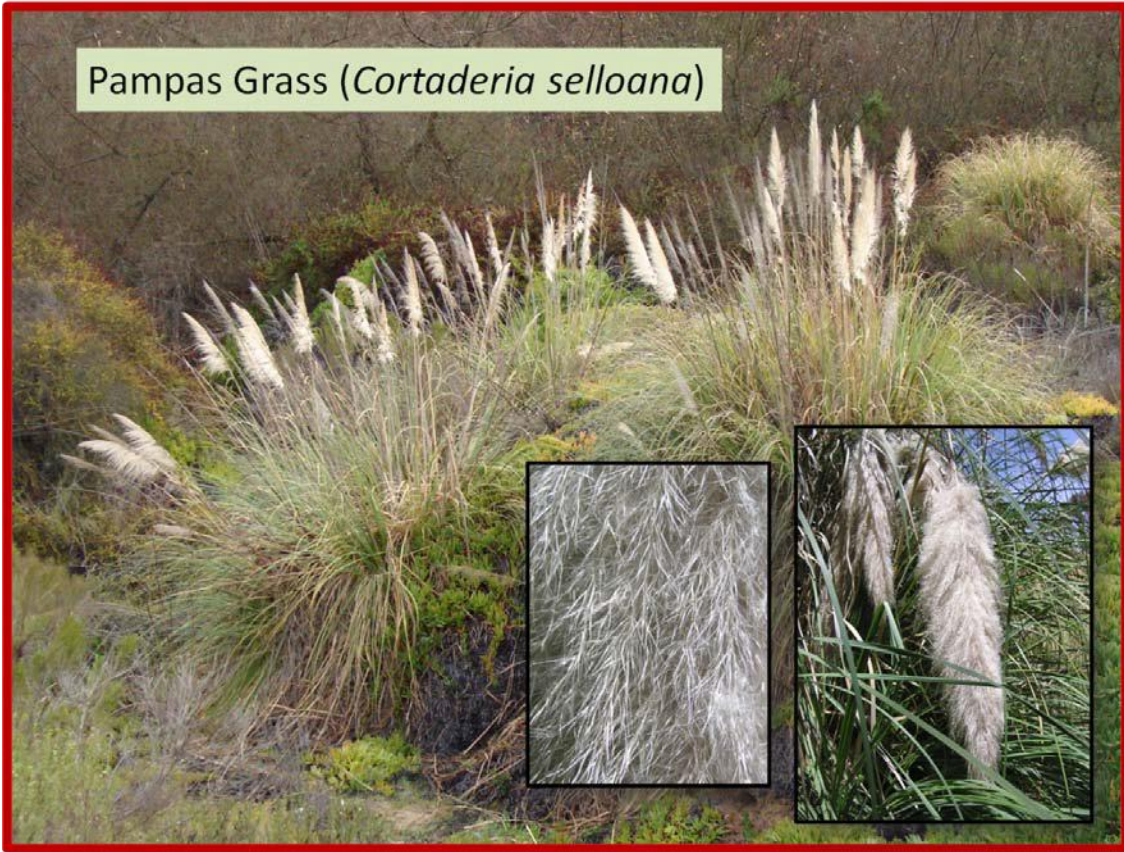
Wild Oats (*Avena barbata*)



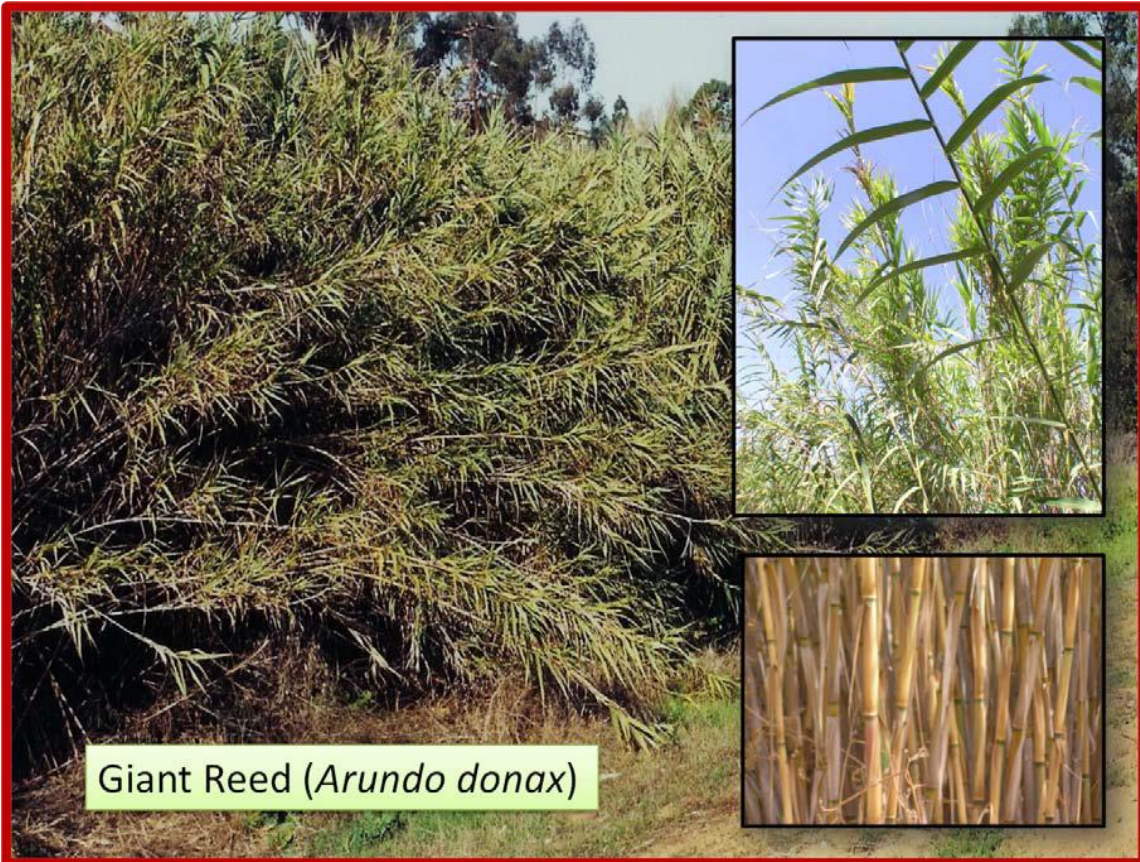
African Fountaingrass
(*Pennisetum setaceum*)



Pampas Grass (*Cortaderia selloana*)



Giant Reed (*Arundo donax*)



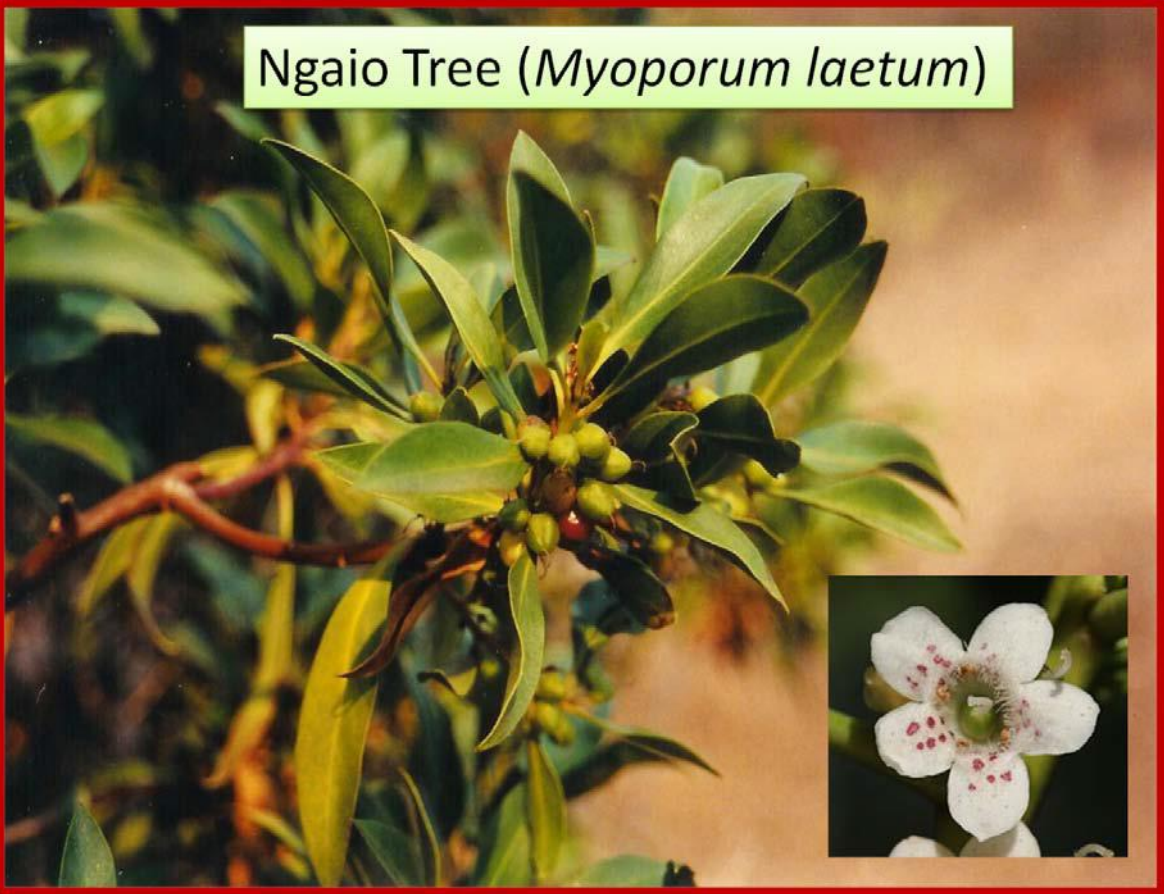


Castor Bean (*Ricinus communis*)

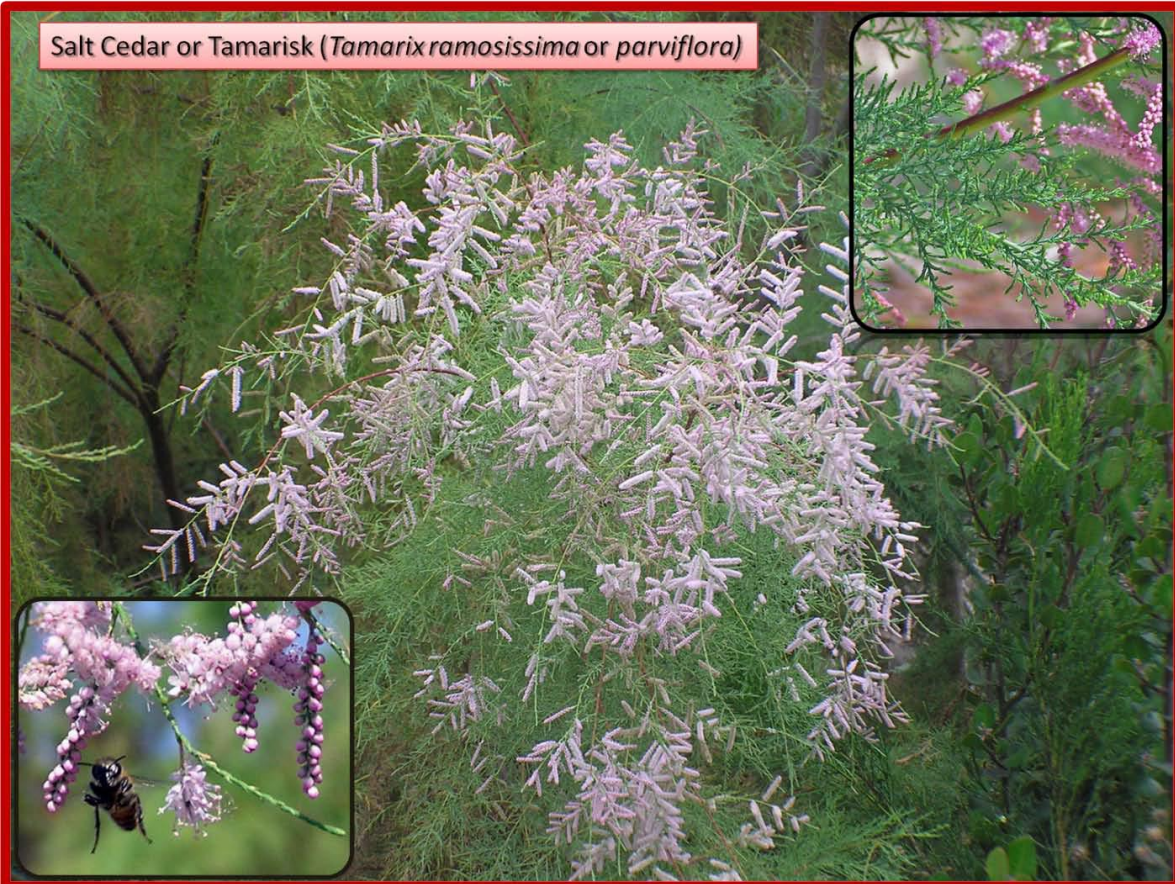


Stinking Goosefoot (*Chenopodium vulvaria*)

Ngaio Tree (*Myoporum laetum*)



Salt Cedar or Tamarisk (*Tamarix ramosissima* or *parviflora*)



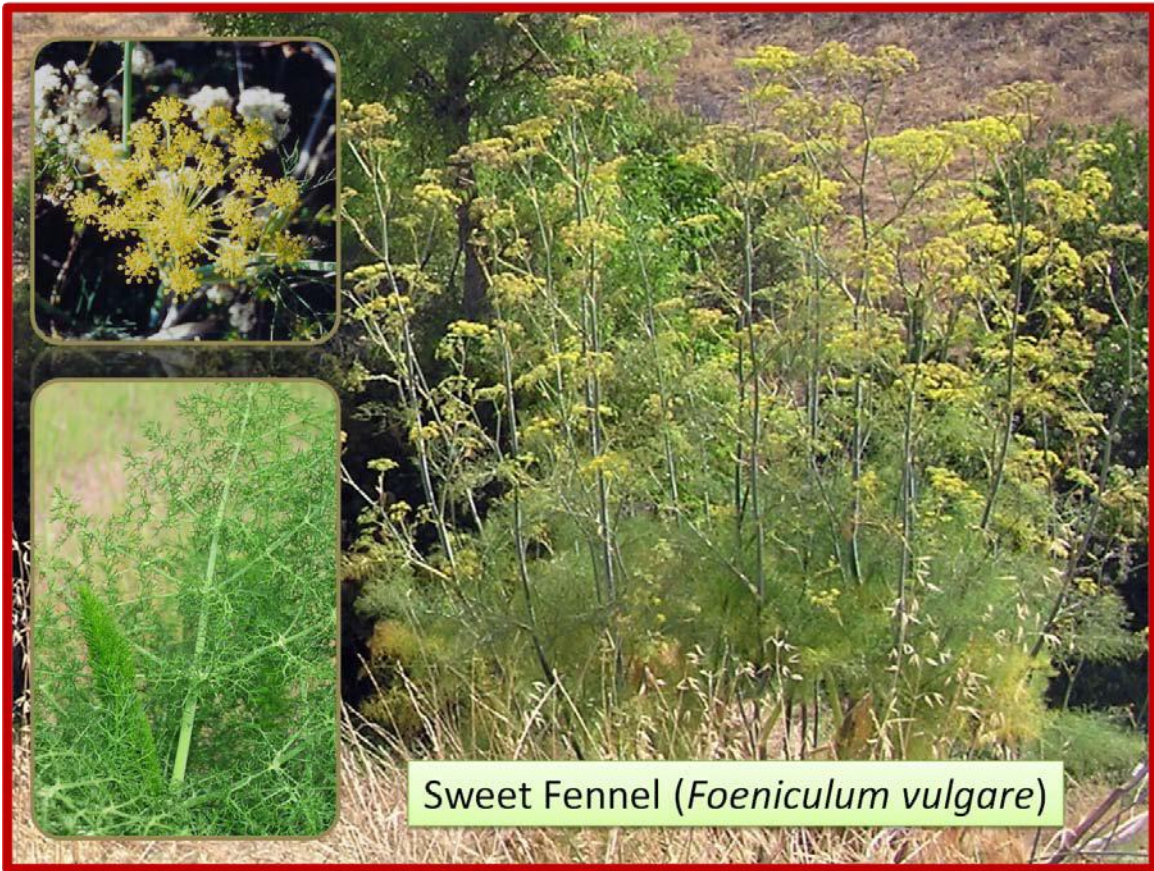


Chrysanthemum (*Chrysanthemum coronarium*)

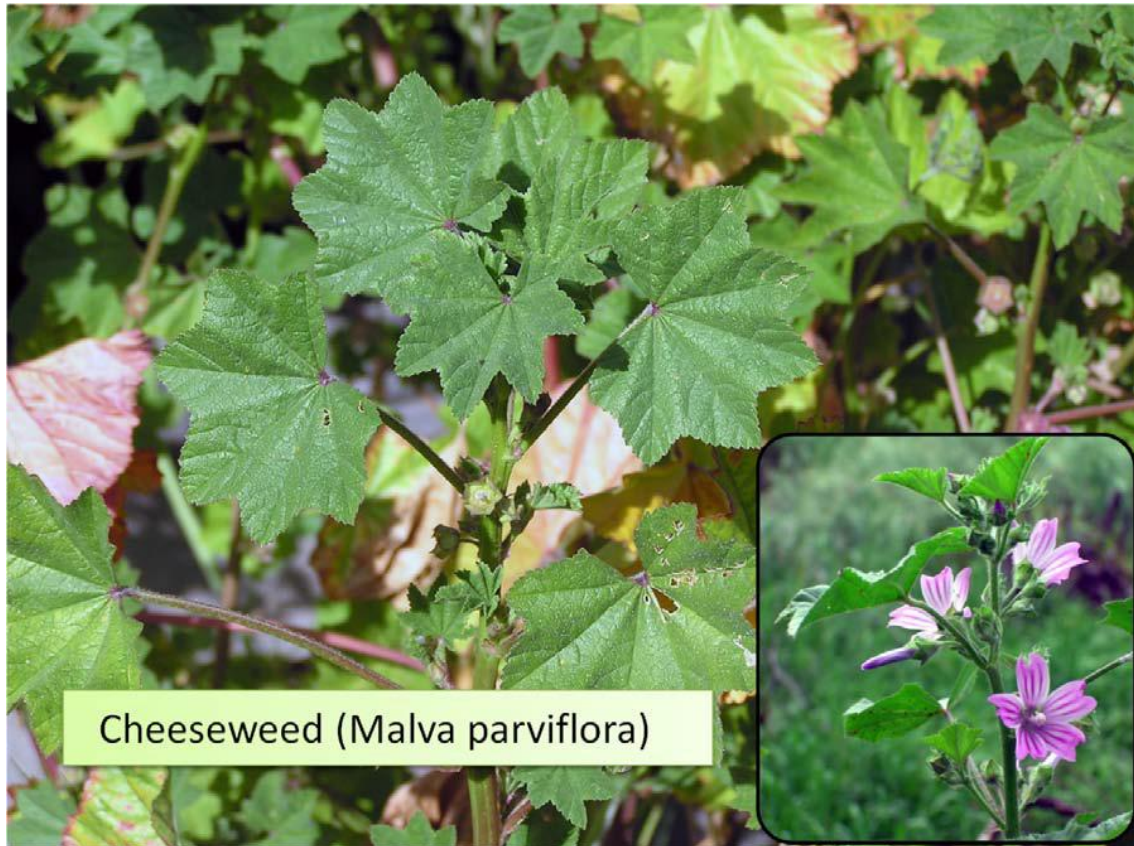


Jade Plant (*Crassula ovata*)





Sweet Fennel (*Foeniculum vulgare*)

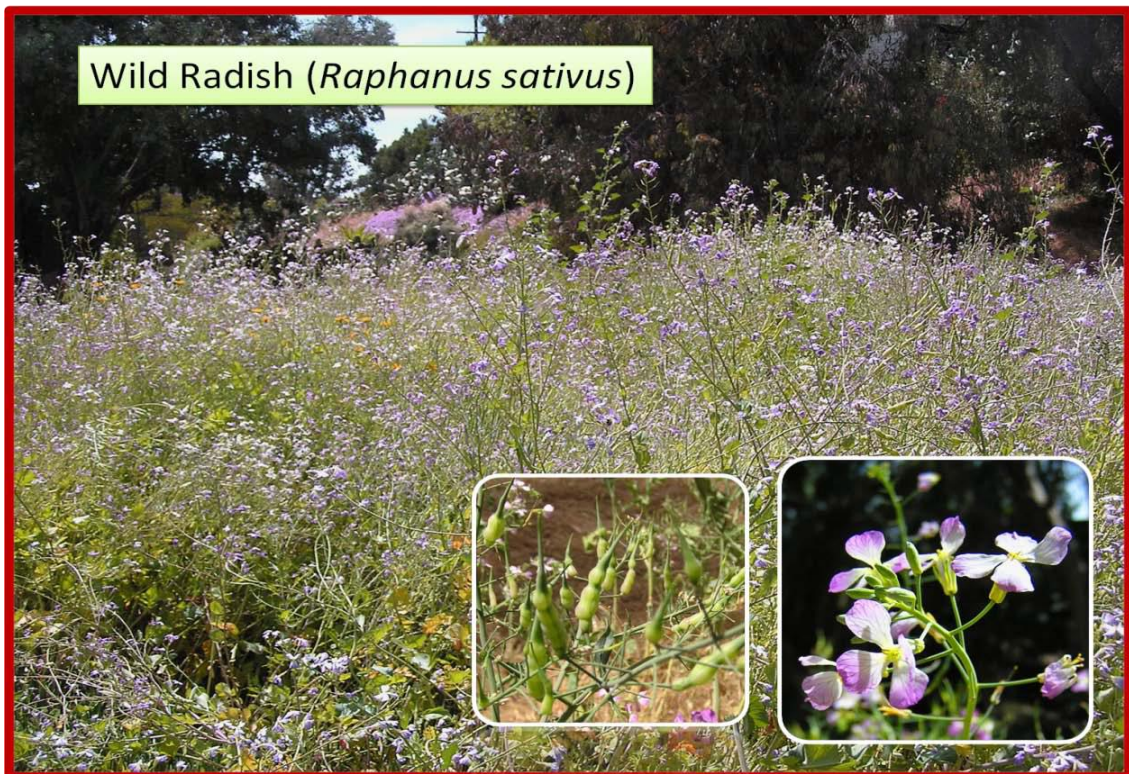


Cheeseweed (*Malva parviflora*)





Peruvian Pepper Tree (*Schinus molle*)



Wild Radish (*Raphanus sativus*)

5. Order of Restoration Operations

Identify the landowners of the proposed restoration site. Often times the canyon land is owned by the City of San Diego, but sometimes it is privately owned. If not the owner, one should obtain permission for entry into the project site and permission for the project itself. In general, most restoration projects take 3 – 5 years when invasive plants are present. The soils may be holding invasive plant seeds that could take years to eradicate. It is ideal to establish any agreement for access and the project for at least five years.

When beginning habitat restoration, it is first recommended to enroll the advice of a professional restoration ecologist to help survey the landscape and develop a restoration plan. An analysis of the plant community in a less disturbed, nearby site with similar conditions could be used as a reference to choose which plants to plant and mimic natural patterns and species composition. A *Canyon Assessment Form* should be used (see after References section). Conditions to match are elevation (from the bottom of the canyon), aspect, or direction of slope in relation to intense sun light and access to light and water. The ecologist will help identify native species, non-native species, and soil and erosion issues. The ecologist will develop a plan as to how to best remove debris and non-native species, as well as suggest which natives should be planted and how they should be grouped and arranged. In addition, the use of mulch and erosion control measures may be recommended. Ask San Diego Canyonlands for a referral.

It is important to understand the natural history of a particular area so that the appropriate plants are used in the restoration process. The collection of plants that a particular area has can be referred to as the “plant palette.” The San Diego Plant Atlas is a valuable resource for determining the correct plant palette.

Removal of Weeds

The most common ways of removing weeds is by mechanical removal, such as pulling the weeds out by their roots, or cutting them with tools, or through herbicide application. Herbicide must be applied (usually sprayed) by a certified herbicide applicator with a “Qualified Applicator Certificate”(QAC). The applicator will know which herbicide to use, what concentration, when it should be applied and how it should be applied under varying circumstances. For example, special herbicide formulations are used for wetland environments. Herbicide should not be applied during windy or rainy weather. Typically, the optimum time to apply herbicide is when the weed is in the seasonal growth stage. Once the herbicide is applied, the weeds are left to die and dry out; subsequently they can be removed or cut and/or chipped to be used as mulch or erosion control on site. San Diego Canyonlands can help you access the services of a qualified applicator.

To keep hillsides from eroding, the process of weed removal may be staggered to allow native plants to establish their roots and hold down the hillside soils before the entire weed patch is removed. In some scenarios, erosion control BMPs or “Best Management Practices,” such as straw wattles and jute netting will be used to help maintain the hillside and prevent erosion while native plants take root.

Another method of restoring native plants to weedy, steep slopes is to kill the non-native plants with herbicide. After the weeds are confirmed dead, container plants are introduced. This works particularly well when the slope is covered with ice-plant. The dead ice plant protects the steep slope from erosion while the native plants are growing and serves as mulch to keep moisture in the soils. Conversely, to simply pull the ice plant out of the ground will both loosen the top soil and leave it vulnerable to erosion.

Simple regular manual removal/weeding of non-natives is a highly effective method for restoration if a native seed bank is still present in the soil.

Tip: When removing weeds manually, be sure to start at the central location you wish to plant or where a plant currently exists and weed a space 3 feet in diameter or larger depending on the size of the plant. When pulling weeds, be sure to get the roots and shake off any extra dirt attached to the roots.

Planting Appropriate Native Plant Species

Aspect, hydrology, fire regimes and soil chemistry all need to be taken into consideration when beginning a restoration process. Aspect refers to the direction a slope is facing. If the slope is facing south it gets more sunlight, is

drier, and therefore needs plant species that can tolerate more sun. If the slope is facing north, the species there need to be more shade tolerant, etc.

6. Restoration – Understanding Plant Communities

How to Select What Plants to Plant

There are often several plant communities within a single canyon. This is due to the varying conditions such as “aspect” or position in relation to intense sun, and access to water sources. There is more moisture in the bottoms of the canyons where streams flow during storms. Some plants may grow roots down to water tables deep below the surface where water is available throughout most or all of the year.

Riparian Woodland: Trees and taller plant species grow along the streams in the bottoms of canyons where they have more access to water. This is where mulefat and trees such as oaks, willows, cottonwood, and sycamores grow. This narrow corridor is called a “riparian wetland” or “riparian woodland”. Although the stream may be intermittent, with water flowing only during storms, the presence of unseen water is obvious due to the height and amount of green vegetation that thrives here. In the semi-arid climate of San Diego, “wetlands” are often defined by the vegetation that grows there. Willow trees are considered a “wetlands indicator” species. Their roots must reach water, deep in the ground, all year round! The “riparian zones” are important to animals for access to water, food sources, nesting and shelter, and for moving between habitat areas. Animals often travel at night and feel safe beneath the canopy cover of a thick woodland. The long riparian zones provide connectivity between larger areas of habitat which provides foraging opportunities and connection with other animals of their own species. Because the extent of wetlands is so diminished and because they are so important to wildlife, wetlands restoration is critically important to many species that are close to extinction. Half of all endangered and threatened species depend on wetlands for at least part of their life cycle.

Chaparral: Covering more land in San Diego County than any other type of vegetation, Chaparral is characterized by stands of densely-spaced, evergreen, woody shrubs, and is found along coastal bluffs, in the fringes of valleys, up foothills, and on mountain slopes. Chaparral plants have evolved to survive in our Mediterranean climate of mild, rainy winters and long, hot, dry summers. Unlike many Coastal Sage Scrub plants, Chaparral plants are evergreen (they don’t lose their leaves during the summer), having small, thick, stiff leaves that resist water loss due to evaporation during periods of drought. Chamise is the most common Chaparral shrub, but species of *Ceanothus*, Manzanita, Scrub Oak, Laurel Sumac, and Lemonade Berry are also commonly found.

Coastal Sage Scrub (CSS): CSS is another distinct habitat type that is found in most of San Diego’s canyons. The plants of this community grow mainly above the stream corridors on the steep slopes of the canyons. These communities are commonly referred to as *uplands*. Typically, the CSS plant community can be found on the south-facing slopes of a canyon and their community make up is determined by this “aspect” with respect to the sun. Because south-facing slopes are hotter and drier, many species have adapted by becoming dormant in the summer months. These plants will appear to be dead in the summer, but they are merely resting and waiting for the next rainy season. Cactus can be found in CSS.

NOTE: Only trees and low growing vegetation with a mature height of 15 feet or less may be permitted within SDG&E’s rights of way in certain canyons. SDG&E may consider native tree species not contained in the following list when the landscape plans submitted are prepared by a licensed landscape architect. These trees may not be acceptable in certain situation where hardware, line sag, construction or terrain become a factor to either reduce tree heights or eliminate trees altogether. The following tree species are offered as examples of trees with a mature height typically not exceeding 15 feet:

***Ceanothus tomentosus* | Ramona Lilac**

FOLIAGE: Evergreen – Dark green leaves.

HEIGHT: Moderate growth to 8 – 15’.

FLOWER: Blue or white flowers Mar. – May.

COMMENTS: Best in full sun. Drought tolerant, needs hose water through the first season. Needs soil that drains easily.

***Cercis occidentalis* | Western Redbud**

FOLIAGE: Deciduous – Leaves are round & medium green.

HEIGHT: Moderate growth to 15’.

FLOWER: Magenta – Blooms March to April.

COMMENTS: Grows in full sun or part shade. Needs a soil that drains well.

***Rhus integrifolia* | Lemonade Berry**

FOLIAGE: Evergreen – Dark green leaves.

HEIGHT: Moderate growth to 15’.

FLOWER: Pink to white flower. Blooms Feb. – Mar.

COMMENTS: Tolerates wind and drought. Needs a soil that drains well.

***Rhus ovate* | Sugar Bush**

FOLIAGE: Evergreen – Glossy dark green leaves.

HEIGHT: Moderate growth to 12’.

FLOWER: White and pink flower. Blooms Mar. to May.

COMMENTS: Tolerates heat and drought. Needs a soil that drains well.

7. Restoration Tips

How to Easily Propagate/Reproduce Certain Native Plants.

Multiplying Mulefat

Seasonally dry (“intermittent”) streams in San Diego are often lined with mulefat (*Baccharis salicifolia*), an aromatic member of the Sunflower family that withstands floodwaters and other disturbance. As its Latin name implies, mulefat looks a lot like willow but can grow in drier areas. Like willow, its roots help stabilize stream banks. A mulefat-lined stream is a delightful place of sweet-smelling filtered sunlight. Propagating mulefat is an easy way to jump-start riparian restoration.

To add mulefat to a stream restoration project:

- Choose the right time of year – after the winter rains have moistened the soil.
- Use several mature shrubs close to the restoration site as a cutting source – this helps provide both plants adapted to site conditions and some genetic variation.
- Cut a stem of mulefat at least as long as your arm and as wide as your finger – the stem contains the sugars needed for growth. Thicker stems (> 1” diameter) can be a bit shorter. A few cuttings from a single shrub will not harm it.
- Cut the bottom of the stem at an angle, so you remember which part to put in the ground.
- Strip off all of the leaves – this keeps the stem from drying out and dying. At this point, you may place the stems in a bucket of water and wait a week or two before planting.
- Take the stem to the planting site and push the cut end into the moist soil, as far as possible, but leaving at least two buds above the soil surface.
- Wait. New leaves will sprout in about two months. You should have robust plants growing in your canyon in no time!
- NOTE: For links to photo guides and more information about mulefat check “References” section of this handbook).

Using Prickly-Pear and Cholla Cactus

This is the easiest restoration practice possible, once you learn to spread cholla without injury. It's not so much the spines you need to look out for, but the "glochids" -- the tiny deciduous spines that form a ring at the base of the longer spines. Although cacti can be painful, they have excellent wildlife value: coast prickly pear (*Opuntia littoralis*) is the nesting habitat for cactus wren, now uncommon in urban San Diego. These techniques work for both the pads of prickly pears (*Opuntia*) and or stems of chollas (*Cylindropuntia*):

- Choose the right place: cactus like lots of sun. They may grow in the shade of other plants, but only on south-facing slopes. Avoid wet spots or deep shade or they will rot.
- Choose the right source: mature plants from a nearby area are best. Never dig up cactus unless the bulldozers are rolling; instead simply remove a few pads or stems from a large plant.
- Protect your hands: Use a "trash-picker" (hand-operated tongs, you can even use kitchen/barbeque tongs) to grasp the pad or cholla stem, and place them in a paper sack. Thick gloves will work too, but look where you grab – and where you step.
- Wait a bit. Store the pads/stems in a dry place for anywhere from a couple weeks to several months. This gives the base of the pad time to 'harden off' to resist infection.
- Plant the pad. The pads/stems will root once they are in contact with the soil. You can simply scatter the pads on the ground, or bury the lower quarter or so to improve contact. Stake them or place them under an open shrub like sagebrush to avoid their being stepped on.
- That's it! The cactus will patiently wait until a rain stimulates it to set roots down into the damp soil.

Using Stem Cuttings to Make Container Plants

Volunteer restoration groups on a budget appreciate being able to grow their own container plants. Did you know that there is also a good biological principle behind propagation from cuttings? San Diego is home to a wide variety of plant communities with varying environmental conditions. The resident plant populations have adapted to the particular sites over years of natural selection. Plants from your particular area may be more suited to it than plants of the same species from miles away. Cuttings are an easy way to propagate plants for many species, especially those with difficult-to-germinate seeds. The process is low in labor and can be successful in the corner of a residential back yard. Keeping notes on which species work for you will help other people.

To Grow Plants From Cuttings:

- Prepare common 1-gallon or 5-gallon size pots by filling with soil and soaking thoroughly. If soil is hard to wet, place the pot in a bowl of water overnight, then let drain.
- Get permission from the property owner before taking samples. Removal of a small number of stems will not hurt a plant.
- Cut a stem about one to two feet long.
- Remove all the leaves, which will otherwise desiccate the cutting.
- Push the cut end into the soil all the way to the bottom, leaving two nodes above the soil.
- Place the pots in filtered sunlight (for example, under a tree or a shade cloth).
- Sprinkle the pots every three days or so.
- By the end of a month, the cutting will be sprouting new leaves, or it will be clearly dead. If dead, toss it and reuse the pot for a new cutting.
- Once the plant has a number of new leaves and is growing well, plant it in your restoration site.

Species that are fairly easy to propagate from cuttings include:

Blue Elderberry (*Sambucus Mexicana*), California Fuchsia (*Epilobium sp.*), Willow (*Salix sp.*), Mulefat (*Baccharis salicifolia*), Arrow weed (*Pluchea serricea*), Western Cottonwood (*Populus Fremontii*), Black Cottonwood (*Populus basalmifera*), Mugwort (*Artemisia douglasiana*).

Some other species that may work for you are: Monkeyflower (*Mimulus aurantiacus*) and Lemonade Berry (*Rhus integrifolia*).

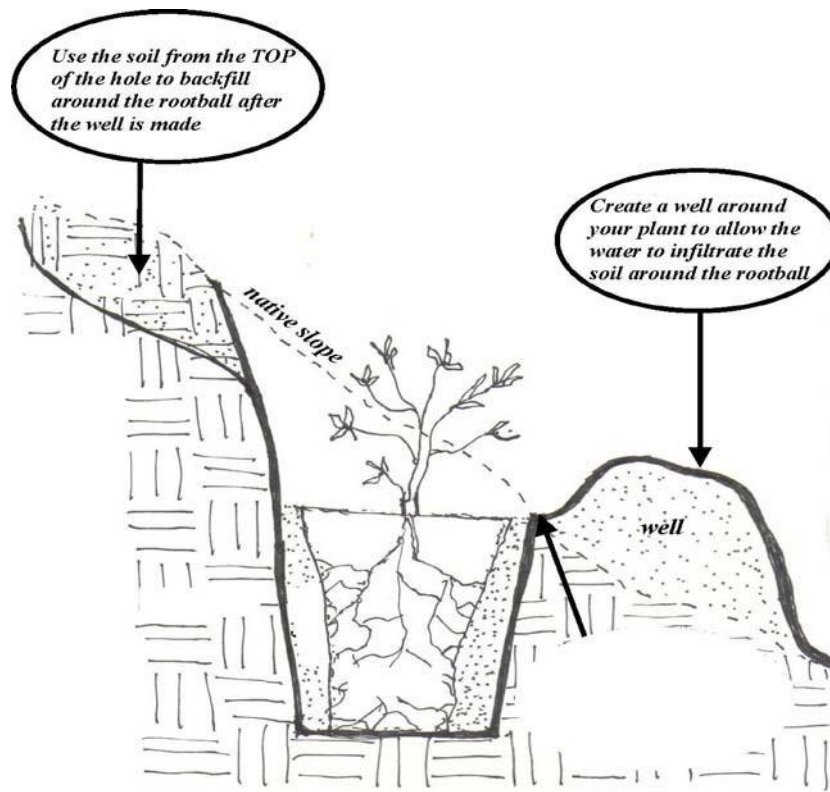
Using Container Plants in a Restoration Project

Some sites may benefit from introduction of container plants. For instance, the native seed bank might be diminished because of extensive past slope grading. Or you might want to get more coverage more quickly than possible by seeding. In weedy areas, using container plants properly will result in a much higher chance for plant establishment than spreading seed alone, which is frequently ineffective due to the weeds and our unpredictable rains.

Appropriate container plants are grown from seed that is either collected in the wild or propagated from wild-collected seed. Don't use "horticultural varieties" of plants (e.g. *Ceanothus* "Dark Star"), even if they are derived from local species. The reason: horticultural varieties are typically selected from a single or small number of individuals, for a particular characteristic which suits a landscaping requirement. This greatly reduces the genetic variability that wild plants need to survive without care in a natural environment. If used in large quantities, the genes from horticultural varieties may even reduce the fitness of wild populations.

How to Use Container Plants:

- Use container plants grown from seeds collected as close as possible to the restoration site. Don't use horticultural selections.
- Obtain the container plants. You can grow your own, or order from commercial sources (see www.cnpsd.org/horticulture for a list of native plant nurseries).
- Identify water source: even if they are low-water-use plants, container plants **must** be watered when they are planted (2 gallons is best) and several times afterwards (every 2 weeks in dry spells, otherwise monthly for the first 1.5-2 years). If houses are close by, homeowners may be willing to donate water from a hose tap, especially after you explain the purpose of the project. Other possibilities are carrying the water in using 1-gallon jugs, or from containers transported to the site in a truck or all-terrain vehicle.
- Prepare the hole: use a "duckbill" (pointed) shovel or pickax to dig the hole, and arrange the excavated soil into a circular "levee". The goal is to put the plant in the middle of a depression that will retain water. The proper technique is difficult to describe, so you may want to visit a project where you can learn the details.
- Water the hole: fill the hole with water and let it soak in. Do this again as many times as you can. You are creating a "water account" for the plant that will help it to grow deep roots.
- Remove the plant from the container as gently as possible. Contrary to advice for typical landscape plants, don't rip into the root ball of natives; many will not appreciate it.
- Place the plant in the hole; add back soil to the original level of the soil in the container. Tamp the soil around the plant with your hand or foot to eliminate air spaces around the roots and to help achieve good root-soil contact. Pour more water on top to further settle the soil around the root ball.
- Mulch the plants (see next section on maintenance).
- Water some more, until you run out of time or water – a good soaking rain will save you lots of labor. In its absence, you need to return to the site in about 2 weeks and water the plants again; at this point, you will appreciate having well-designed basins around the plants. If you plant in the rainy season (November – February) and get a couple of good soaking rains, you won't have to water as much through the first summer. If you plant outside of this season, watering through the summer (every 2-4 weeks) will be necessary to help your plants survive.
- **Tip:** *When planting container plants, dig a whole deep enough for the plant to be level with the surrounding ground. Dig the hole twice as wide as the plant and after planting, and create a moat for each plant so water does not run off. Plant the same species of plants in groups of two or three, leaving 2 feet between them. However, leave five feet between other groups of different species.*



Planting detail for canyon hillsides

8. Maintenance of a Restoration Site

Mulching

After an area has been restored, it is very important to use mulch to control erosion, hold moisture in the soil, and reduce weed encroachment. Types of mulch include bark, wood chips, compost, decomposed granite, and river rocks.

Regular Watering

Even more importantly, it is **imperative** that a watering regime be established to provide sufficient water to the new plants during the establishment period (new plants should absolutely be watered every month the first summer and even the second summer). When watering, do not sprinkle the whole area or you will promote weed growth as well. Deeply soak newly planted native plants (1-2 gallons of water). This teaches the roots where to grow to find moist soils deep in the ground. Watering is required for about two years after planting so the plants may survive the first few summers until they are well established and their roots are at the appropriate depth. Root growth is particularly important in the first stages of plant growth. The plants will grow their roots first, before growing upward and increasing visible biomass.

Regular Weeding

In addition to mulch and watering, it is extremely important to continue the removal of debris and weeds from the restoration site, to maintain the advantage to necessary resources (sun, water and soil nutrients) to the new native plants.

9. Glossary

Aspect: A view commanded; exposure: Ex: The canyon has a southern aspect.

Canyon: A deep valley with steep sides, often with a stream flowing through it.

Coastal Sage Scrub: A vegetation community dominated by California sagebrush, and other sages occurring in coastal regions.

Chemical removal: The use of herbicides to eradicate a particular species of plant, usually a non-native species. This process usually occurs after the “mechanical removal” of non-native species.

BMPs: This is an abbreviation for “Best Management Practices” such as straw wattles or jute netting to prevent erosion of a hillside, especially after non-native species have been removed, and native species have yet to establish.

Encampments: The illegal camping areas used by the homeless within our canyons.

Erosion: The process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves, etc.

Hydrology: The science dealing with the occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere.

Mechanical removal: This use of tools, rather than chemicals, to remove vegetation, usually non-native vegetation. This method of removal is often used before an area has been sprayed by herbicides (“chemical removal”).

Native plants: Plants known to historically occupy an area and provide habitat for native animal species

Non-native plants: Plants known to have historically occupied other areas of the world and have become established in a particular area, often times out-competing the native plants and reducing the quality of habitat for native animals.

Plant palette: The combination of native plants which historically should occupy a given habitat (vegetation community).

Watershed: The region/area drained by a river, stream, etc. (drainage area).

Wetland: A low-lying area of land that is saturated with moisture, especially when regarded as the natural habitat of wildlife. Marshes, swamps, the bottoms of canyons, and bogs are examples of wetlands.

10. References/Resources

San Diego Canyonlands: www.sdcanyonlands.org

San Diego Plant Atlas: www.sdplantatlas.org

California Invasive Plant Council: <http://www.cal-ipc.org>

Wetland Action: www.wetlandaction.org

Point Reyes Bird Observatory Conservation Science: <http://www.prbo.org>

For other glossary terms: www.dictionary.com

Sustainable Energy Resource Group: www.serg-info.org

To contact your local police: www.sandiego.gov/police/neighborhood

For information on obtaining seeds and container plants:

RECON Native Plants, Inc: www.reconnativeplants.com

Las Pilitas Nursery: www.laspilitas.com

For photo guides and more information about mulefat:

www.calflora.net/bloomingplants/mulefat.html (shows male and female flowers)

City of San Diego Park & Recreation Dept. – Open Space Division

Canyon Project Assessment Form (Under 5 Acres)

Name of Project:

Location:

Name of Friends Group/other:

Name of Staff person:

1. Provide Project Description.

- a. Submit Scope of Work
- b. List funding sources: City, Grants, Donations, other

Example:

Removal of *Arundo donax* and other non-native weed species and revegetation of native plant species. Application of herbicide and mowing and chipping of non-native weeds.

2. Describe habitat type and area.

- Stream bed _____
- Upland _____
- Brush Management _____
- Riparian or wetland _____

3. Describe type of work to be performed.

Invasive removal

- Species
- Method: Chipping, mulching, chainsaw, girdling, pesticides, crew, hand tools

Note: Invasive removal projects may be restricted by bird nesting season and/or survey.

Re-vegetation

- Submit planting plan that include **utility offset** (see below)
- Species to be planted
- Method of planting
- Container or cuttings or seeding
- Maintenance requirements

Trails

- Tread _____
- Vegetation _____

Construction

- Steps _____
- Kiosks _____

4. Provide maps and photos of pre-existing conditions of project site and proposed work.

Required information on maps

- Project area
- Utility lines and access paths
- Brush Management Zone (obtained from the BM staff)
- Areas for invasive removal and or planting
- Parcel ownership
- **Example** of planting plans for wetlands, uplands, and BM zone (only if planting in BM zone) (see attachment 1)
- Trails/Trail amenities-existing and proposed.

5. Check all relevant plans to ensure that the project is compatible, and that plant installation or trail is not within the alignment of infrastructure to be built in the future.

- Community Plan
- MSCP subarea plan: <http://www.sandiego.gov/planning/programs/mscp/pdf/subareafullversion.pdf>
- Natural Resource Management Plan
- List plans reviewed and provide applicable language

6. Obtain Inter-Departmental and SDGE Approval (this step is facilitated by the Open Space Division.)

- PUD Waste Water Branch: (Bill White 858-614-5789 and Keli Balo 858-292-6423)
- PUD Water Branch: (Niki McGinnis 619-533-4101)
- Street ROW or Paper Street: (Yousef Hasan 619-527-7504)
- Open Space Division: (Paul Kilburg 619-533-4101 and Laura Ball 619-533-6727)
- Right of Entry Permit (same as above)
- Development Services Division (Archeology site review Myra Hermann 619-446-5372 or Jeff Szymanski 446-5324)
- Bird Survey (seasonal March 1st-September 15th)(Betsy Miller 619-685-1314,or Ranger staff)
- Brush Management (Josh Garcia 619-533-6713) (only if planting in Brush Management zone)
- Wetland Mitigation Working Group (Kerry Santoro 619-533-5460)
- SDGE: (Jeff Sykes 858 654-1235)

Utility Offset Guidelines

A. PUD Waste Water and Water

General Landscape

Planting or seeding over sewer lines located within 10 feet of underground utility lines and in the vicinity of utility access paths on Open Space or Environmentally Sensitive Lands (ESL) shall be as follows:

- No trees shall be planted within 10 feet of any sewer main or lateral.
- No shrubs that mature over 5 feet in height shall be planted within 5 feet of any sewer main or lateral.

Threatened or Endangered Plants

No threatened or endangered* plant species shall be planted or seeded on sewer access paths, within 3 feet of the edge of access paths, or within 10 feet of sewer mains or lines.

*As described by the [U.S. Fish and Wildlife Service](#) and by the [California Department of Fish and Wildlife](#)

Landscape for Access Paths in Environmentally Sensitive Areas

Trees or shrubs that mature over 3 feet in height shall not be planted on the sewer access paths and shrubs that will overgrow the access paths shall not be planted adjacent to the edges of the path area. Planting on the paths must be consistent with the approved planting palette (see attachment 2). Additional or alternate plant species not included may be approved by the EPM Environmental Section.

B. SDGE

- Nothing may be planted on the access roads and work areas around poles or structures unless it is intended to be driven on and is not slippery or a fire hazard.
- SDGE is required to maintain a minimum area of 10' in radius from many of their poles. This area is cleared to bare earth as a fire prevention measure.
- SDGE should be informed of and approve of any plantings that are proposed in easements or on the access roads.
- Anything planted could be subject to temporary or permanent removal by SDG&E and mitigation, if required, would be through SDG&E's NCCP.
- Refer to SDGE's approved tree list (see attachment 3) for any tree plantings within SDGE electric easements and access roads. They are generally all under 15' tall at maturity.
- Plantings over the gas lines and not on the patrol roads must be low growing with non-invasive roots, ground cover only, no bushes or trees. SDGE must be able to see the ground itself over the gas lines. Trees shall not be planted within 15' of gas lines.