Invasive Plant Removal Calendar of Santa Cruz County

Brought to you by the Resource Conservation District of Santa Cruz County
www.rcdsantacruz.org

Funding for this project has been provided through a grant from the Community Foundation of Santa Cruz County

What Is So Bad About Invasive Plants?

Across California, invasive plants damage wildlands, displace native plants and wildlife, increase wildfire and flood danger, consume valuable water, degrade recreational opportunities, and destroy productive range and timber lands.

The abundance of invasive plants in Santa Cruz County poses a real threat to native plants and wildlife especially in riparian corridors; the unique plant community consisting of the vegetation growing near a river or stream. Invasive species are marked by their ability to spread easily and rapidly, such as English ivy, which grows over native trees depriving them of light. Riparian tree mortality threatens critical nesting habitat for migrating birds, shade for fish in the stream, and bank stabilization.

Historical accounts suggest a rapid drop in steelhead and coho populations has occurred since the 1960's. The *Soquel Creek Watershed Assessment and Enhancement Plan* (2003) explores numerous factors that have caused steelhead population reduction and coho extirpation (absence). Among these are the declines in the quality and quantity of in-stream habitat, localized increases in water temperature (in part due to historic losses of riparian vegetation), sediment entering the stream due to erosion, and low water flows. By removing invasive plants from your property and public lands you are helping to protect your community from fire potential and flood danger, conserve valuable water, and restore habitat for wildlife.

Regarding Removal Techniques

Only physical removal techniques are provided in this calendar however mechanical, chemical and biological removal methods do exist for several of these invasive plant species. It is highly recommended that a restoration professional be consulted before use of these other methods. Herbicide use should be monitored by a licensed professional. See the back cover for additional resources.

Erosion Control

Erosion control is a very important part of any restoration effort. After removal of non-native invasive plants, erosion control should always be a consideration. To reduce erosion potential native grass seed and light hay mulch should be spread over disturbed soils, and shrubs and trees should be planted when appropriate. On steep sites erosion control blankets such as jute netting or coconut fiber should be laid over seed and hay mulch, and straw waddles should be used where necessary.

Healthy Watersheds Restoration Program

Santa Cruz County Resource Conservation District

Healthy Watersheds Restoration Program was started in 2003 as the Arundo donax Eradication Program to address the Arundo donax sites on Soquel Creek as identified in the Soquel Creek Watershed Assessment and Enhancement Plan (2003). Arundo donax has successfully been removed from six sites along Soquel Creek over the last three years. In 2005, removal of English and Cape ivy (among other non-native invasive plants) and habitat restoration began on three sites along Soquel Creek totaling about 8 acres. Goals of this program include eradication of Arundo donax from the Soquel Creek and San Lorenzo River watersheds, restoration of riparian corridors throughout the County to benefit wildlife, and decrease erosion, fire, and flood risks. Another goal of the program is to improve upland habitat through restoration of upland areas. Upland habitat restoration includes invasive plant removal and re-vegetation projects as well as fuel load reduction projects. The program also aims to educate the community about the threats of non-native invasive plants in order to prevent the spread of invasive plants in Santa Cruz County.

Contact Jennifer Stern at 831-464-2950 x24 for more program information.

Tools & Assistance

Public and private landowners are eligible for technical assistance in the form of free site visits and recommendations for habitat restoration projects. Please contact us for more information.

Habitat Restoration project along Soquel Creek

Ivy overgrowth along Soquel Creek impairs riparian habitat by out competing native plants and harming established trees.

After removal at the same site. Annual grass has been established for erosion control until the area is revegetated with native plants.

WHAT TO DO IN YOUR BACKYARD IN JANUARY:
Remove Cape and English Ivy. See HOW TO REMOVE listed below.

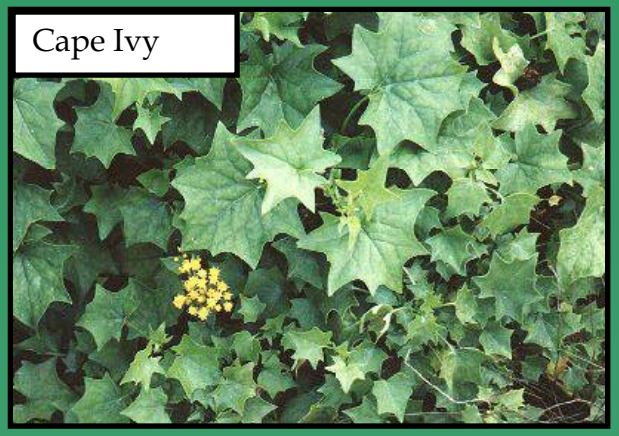
English Ivy

Cape Ivy, *Delairea odorata*
English Ivy, *Hedera spp.*
WHY REMOVE? The leaves of Ivy are toxic to monarch butterflies, coho salmon, steelhead trout, and freshwater shrimp. Dense canopies over the ground can completely shade out all other plants. When ivy climbs trees and shrubs it can completely shade out the host plant, and can become heavy causing the plant to fall. This is particularly a problem over streams where coho and steelhead depend on the shade provided by the trees to keep water temperatures low. Shallow roots can lead to serious erosion problems on hillsides, especially along stream banks where it is often found.

January

Sun	Mon	Tue	Wed	Thu	Fri	Sat

Cape Ivy



Cape Ivy

English Ivy

HOW THEY SPREAD: English Ivy and Cape Ivy spread by seed and vegetatively (with the use of nodules along root sections). English Ivy seed is often dispersed from trees by birds.

HOW TO REMOVE English ivy: Physical removal is an effective method since the roots are shallow, when it covers the ground like a mat it can be rolled up and moved off site. Large runners climbing trees can be cut in two places, leaving a three foot section in between. Following removal, erosion control is highly recommended along with planting diverse native plants or seeds.

HOW TO REMOVE Cape ivy:

Physical removal is an effective method since the roots are shallow. When removing roots fingers or a rake should be used to gather portions of roots in the ground that are left over and that can re-sprout. Getting every last piece is the trick! Cape ivy can often be mistaken for wild cucumber or the like, so be careful.

February

Scotch broom

Sun	Mon	Tue	Wed	Thu	Fri	Sat

Portuguese broom (not in bloom)

French broom

WHAT TO DO IN YOUR BACKYARD IN FEBRUARY:
Remove Scotch, French and Portuguese broom. See HOW TO REMOVE below.

Scotch, Portuguese & French broom
Cytisus scoparius, *Cytisus striatus*, *Genista monspessulana*

WHY REMOVE? Brooms displace native species, alters habitat, and the seeds and shoots are toxic to ungulates. It is prone to fire and facilitates flames into the upper canopy of trees.

HOW THEY SPREAD: Reproduces by seed, and seeds can last in soil for decades. Seeds are often spread by human feet. Plants will re-sprout from crown after cutting or disturbance. Seeds require disturbance that creates exposed soil.

Scotch broom flowers late March to April inland, and April to June on the coast. **Portuguese broom** flowers March to May on the coast. **French broom** flowers late-March to May inland, March to July on the coast. **Scotch broom** and **Portuguese broom** seeds are mature in June and July, and germinate from November to June inland, and January to July along the coast. Dieback occur during summer when moisture levels are low.

HOW TO REMOVE: Physical control for all broom can include removing the entire plant and roots, or cutting to the ground and either covering it with 10mil black plastic or returning to cut the re-growth for years. Competition from native grasses early in the season is important in reducing infestations before and after removal.

WHAT TO DO IN YOUR BACKYARD IN MARCH:
Remove Poison hemlock, Forget me nots, Cotoneaster, Pampas Grass and Acacia. See HOW TO REMOVE below, and in April, May, and July.

Pampas Grass
(Cortaderia jubata)
WHY REMOVE? Pampas Grass competes with native plants, slows growth, creates fire hazards due to build up of dry matter and can block access.

March

Sun	Mon	Tue	Wed	Thu	Fri	Sat

Pampas Grass

HOW PAMPAS GRASS SPREADS: Due to propagation of plants in nurseries, more seeds are produced per plant causing the spread throughout California. Establishment of seedlings occurs mostly in spring. Flowering occurs during August through September and occasionally in winter.
HOW TO REMOVE: Pampas grass resprouts after fire, though if followed by repeated cuttings it may be an effective method for removal. To remove, cut the top with a chain saw exposing the crown of the shoots. Remove the roots with hand tools or heavy machinery with easy road access.

Acacia
(*Acacia dealbata/decurrens*)
WHY REMOVE? Acacia increases fire threat and displaces native habitat. Acacia tree pollen is an allergen.
HOW THEY SPREAD: Releases copious amounts of re-sprouts and suckers after disturbance, seed bank can last as long as 50+ years. Seeds germinate readily following fire.
HOW TO REMOVE: March is a good time to remove Acacia as the fire potential is low. After felling the trees, layers of 10 mil black plastic can be used to cover the stumps. Like Eucalyptus, acacia makes good firewood and can readily be sold if cut or split. An add can be placed free of charge in *The Great Exchange*, a Santa Cruz advertiser for items that are being given away.

Small Acacia Grove

April

<u>WHAT TO DO IN YOUR BACKYARD IN APRIL:</u>
Remove Arundo donax, Poison hemlock, Forget me nots, Cotoneaster, Pampas Grass and Acacia. See HOW TO REMOVE below, and in March, May, July and December.

Forget me not
Myosotis latifolia)
WHY REMOVE?
Reduces habitat for small mammals and birds. Displaces and competes with native vegetation.

Sun	Mon	Tue	Wed	Thu	Fri	Sat

HOW THEY SPREAD:
Reproduces by seed and vegetatively from fibrous creeping roots. Seeds spread by water and animals. Readily grows in many shady and moist soils, spreads rapidly after establishment.

HOW TO REMOVE::
Removal by hand is easy and effective when roots are targeted as well. Shallow roots make the site of removal vulnerable to erosion.

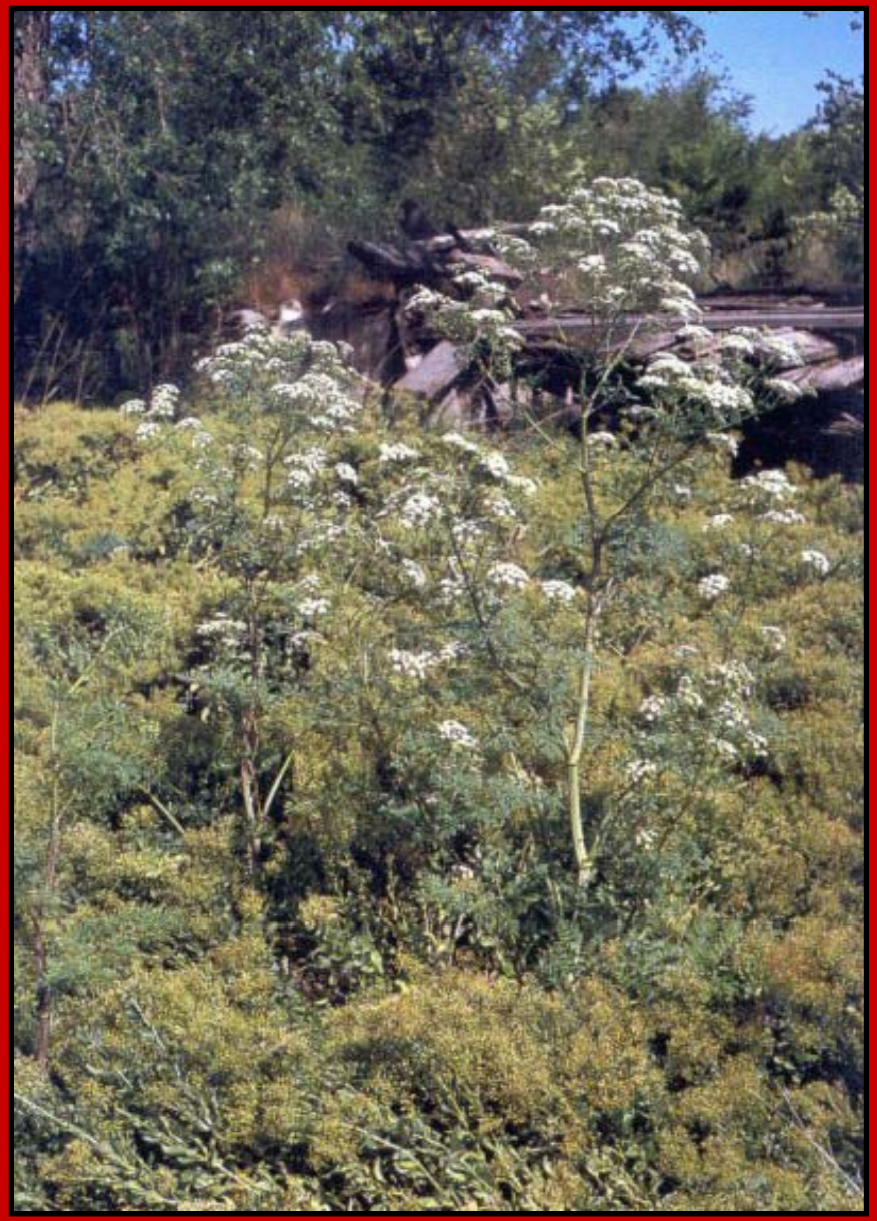
To reduce erosion potential native grass seed and light hay mix should be spread over site, shrubs and trees should be planted when appropriate. On steep sites erosion control blankets such as jute netting should be laid over seed and hay mix and straw waddles should be used where necessary.

WHAT TO DO IN YOUR BACKYARD IN MAY:
Remove Arundo donax, Poison hemlock, Cotoneaster, Italian Thistle and Pampas Grass. See HOW TO REMOVE listed below, and in March, June, July and December.

Poison Hemlock
(*Conium maculatum*)
WHY REMOVE? Establishes in disturbed areas, is highly competitive, toxic to other plants and prevents establishment of native plants by over-shading. It is toxic to some vertebrates, symptoms appear immediately after digestion and death occurs within two to three hours.

May

Sun	Mon	Tue	Wed	Thu	Fri	Sat



HOW THEY SPREAD: Reproduces by seed only, which is dispersed by water, mud, wind, animal fur, human clothing, boots and machinery. Seeds can remain in soil for a few seasons.

HOW TO REMOVE: Hand pulling is an effective method of removal, it is easiest when soil is wet and most effective before seeding occurs (the seed is fully developed by mid-June). Spring mowing has proven effective in killing mature plants, though seedlings do continue to establish. A second mowing is required shortly after re-sprouting.

Italian Thistle

(*Carduus pycnocephalus*)

WHY REMOVE? Adult plants and rosettes can reach nearly 100% cover over large areas inhibiting establishment of natives.

HOW THEY SPREAD: Most seeds germinate below parent plant, although seeds can be wind dispersed allowing for satellite populations to form. Seeds can remain viable in soil for over 10 years. Flowers from June to October, seeds germinate in autumn with first substantial rains.

HOW TO REMOVE: Hand pulling and mowing is effective, but root should be pulled or cut at least at ground level.

June

Sun	Mon	Tue	Wed	Thu	Fri	Sat

WHAT TO DO IN YOUR BACKYARD IN JUNE:
Remove Italian Thistle and Yellow Starthistle, Periwinkle, Iceplant, European Beach grass, and Eucalyptus. See HOW TO REMOVE below, and in October and August, and September.

Yellow Starthistle

(*Centaurea solstitialis*)

WHY REMOVE? Dense stands displace native plants and reduce foraging habitat. Dominates recently cleared or disturbed areas such as over grazed pastures. Yellow Starthistle is toxic to horses. Spines prevent livestock from grazing infested areas.

HOW THEY SPREAD: Reproduces by seed which are viable for at least 3 years. Most seeds fall below parent plants or are dispersed by animals and vehicles. This thistle flowers from June to September, and seeds often germinate in fall or early winter when moisture is present.

HOW TO REMOVE: Hand pulling, mowing, or cultivation is effective with repeated treatments. Roots should be targeted for removal as well. For a complete list of HOW TO REMOVE for yellow starthistle and other invasives search for "invasive plants" on the UC Davis website.

WHAT TO DO IN YOUR BACKYARD IN JULY:
Remove Periwinkle, Iceplant, European Beach grass, Eucalyptus and Acacia (only if there is no threat of fire). See HOW TO REMOVE listed below, and in September, October and March.

Croftonweed/ Sticky Eupatorium
(*Ageratina adenophora*)
WHY REMOVE? Fatally toxic to horses and most livestock. Replaces desirable vegetation, and is a serious weed in wet areas. This weed, like most, also inhibits native plant growth.

July

Sun	Mon	Tue	Wed	Thu	Fri	Sat

Croftonweed/Sticky Eupatorium
(*Ageratina adenophora*)
HOW THEY SPREAD: Seeds are easily dispersed by wind and water. Seeds also can spread as an impurity in agricultural produce, in sand and gravel used for road construction and in mud stuck to animals, vehicles, and footwear. Flowering begins in March and is mature between April and mid- June. Germination occurs between June and March, with peak germination in August and September. Crofton weed can re-sprout from buds on root fragments.
HOW TO REMOVE: Hand removal is easy and the most efficient method for removal. Removal with machinery is difficult because it prefers steep slopes and wet areas.

WHAT TO DO IN YOUR BACKYARD IN AUGUST:

Remove Periwinkle, Iceplant, European Beach grass, Eucalyptus and Acacia (only if there is no threat of fire). See HOW TO REMOVE listed below, and in September, October and March.

Periwinkle
(Vinca major)
WHY REMOVE? Once established periwinkle competes with native vegetation by smothering all native groundcover vegetation and preventing the growth and establishment of trees and shrubs. periwinkle is a serious threat to the understory of forested areas and streamside vegetation.

August

Sun	Mon	Tue	Wed	Thu	Fri	Sat

HOW THEY SPREAD: Periwinkle is introduced to new locations usually as an ornamental or medicinal herb. It spreads locally from dumped garden waste, plant fragments carried downstream, and as a garden escape along shady corridors. It grows most vigorously in moist shady areas in forests, along streams, and urban areas. Periwinkle disperses vegetatively and by seed. Stems extend out from parent plant and establish shallow roots along runners. Flowers begin to bloom in March and continue into July.

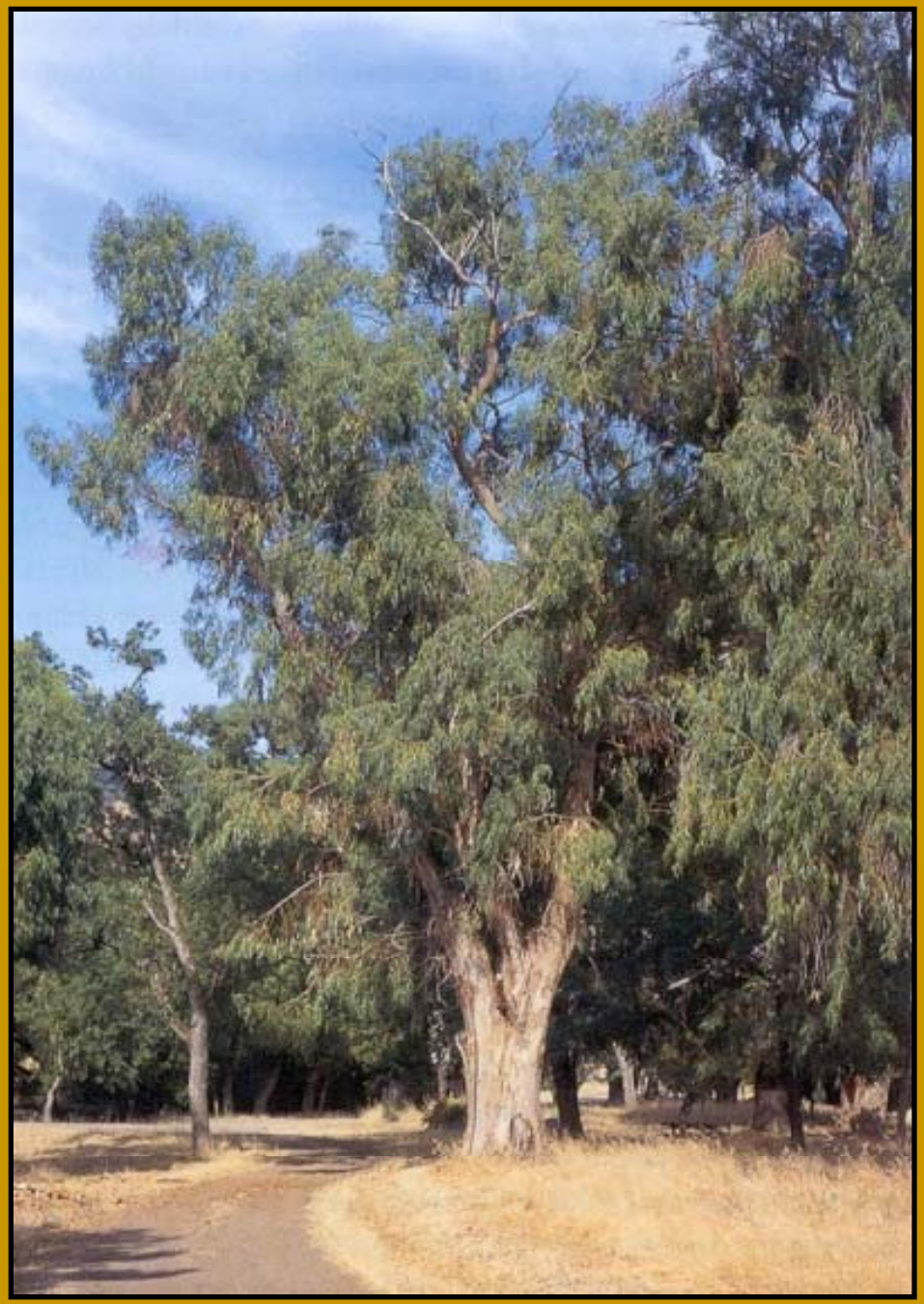
HOW TO REMOVE: Hand removal is labor intensive, but is effective if all the roots are removed. Repeated removal throughout growing season will allow for natives to re-establish area. Mowing or cutting is not recommended due to the ability of the plant to re-sprout from cuttings. Removal techniques are similar to ivy removal. Repeated monitoring and removal is required to successfully eliminate populations.

WHAT TO DO IN YOUR BACKYARD IN SEPTEMBER:
Remove Iceplant, Beach grass, and Acacia (only if there is no threat of fire). See HOW TO REMOVE in October and March.

Eucalyptus
(Eucalypts globulus)
WHY REMOVE? Eucalyptus trees are extremely flammable, and considered the worst in the world for spreading spot fires. The Oakland hills firestorm was due largely to the biomass produced by eucalyptus. Also, the diversity of native vegetation appears to be inhibited by the production of chemicals in eucalyptus leaves that make the soil highly acidic.

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat



HOW THEY SPREAD:
Reproduces by seed and by sprouting. Flowers occur from November to April. Flowers are pollinated by insects and birds. Fruits ripen from October to March, about eleven months of flowering. Eucalyptus typically grows in dense mono-stands.

HOW TO REMOVE: Trees are difficult to remove, but can be used for firewood. An effective method to control stump re-growth is critical, layering stump with black tarp, or grinding the stump are effective methods. Fire is only effective in killing seedlings and sprouts.

WHAT TO DO IN YOUR BACKYARD IN OCTOBER:
Remove Iceplant and Beach grass. See HOW TO REMOVE below.

European Beach Grass
(Ammophila arenaria)
WHY REMOVE? Alters characteristics of sand dunes so native plant communities can no longer flourish. This leads to a monoculture of beach grass which inhibits the ability of the federally listed snowy plover to nest. Snowy plovers require sparse vegetation so that it can watch for predators.
HOW THEY SPREAD: Beach grass reproduces primarily vegetatively through rhizome growth. Beach grass can withstand up to 3.3 feet of sand burial, which is greater than native beach grasses.

October

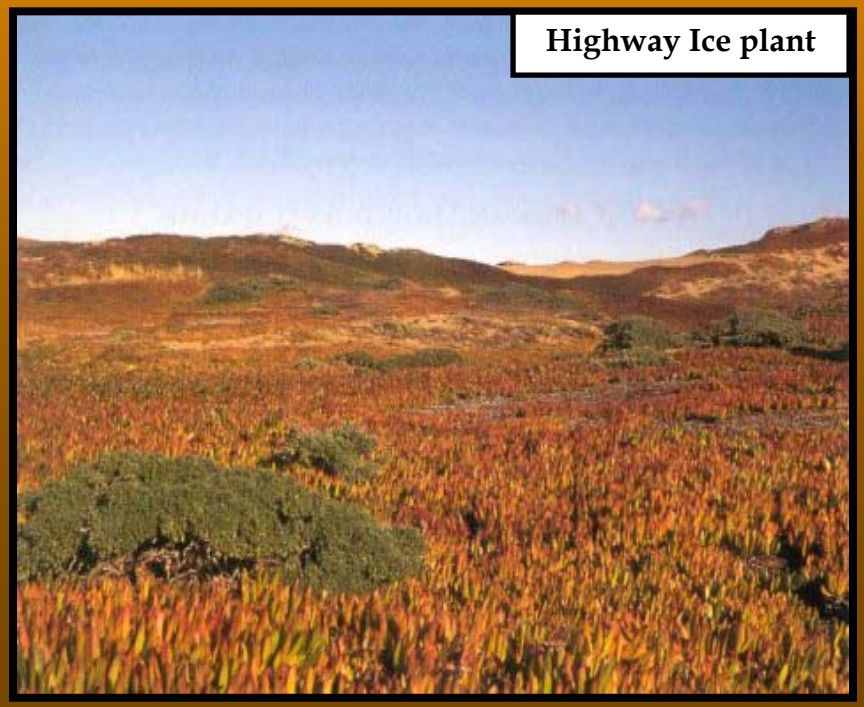
Sun	Mon	Tue	Wed	Thu	Fri	Sat

European Beach Grass

Highway Iceplant
(*Carpobrotus edulis*)
WHY REMOVE? Creates impenetrable mats that can dominate resources preventing any other plant establishment. It can change the native habitat of sandy dunes.
HOW THEY SPREAD: Spreads through seeds in fruits which are eaten by animals such as deer, rabbits and other rodents. Can also spread vegetatively through roots and shoots at every node; any shoot segment can re-sprout. Flowering occurs almost year round beginning in February in southern California and continuing through fall in northern California.
HOW TO REMOVE: Hand removal can be used to remove iceplant. Repeated removals may be necessary.

European Beach Grass
HOW TO REMOVE:
Beach grass can be removed by repeated extensive digging of plants. Removal by digging is required weekly to monthly depending on the site. After removal sifting of the sand with a rake at a depth of about 30 +/- 10 inches will greatly reduce the need to repeat removal the following year.

Highway Ice plant

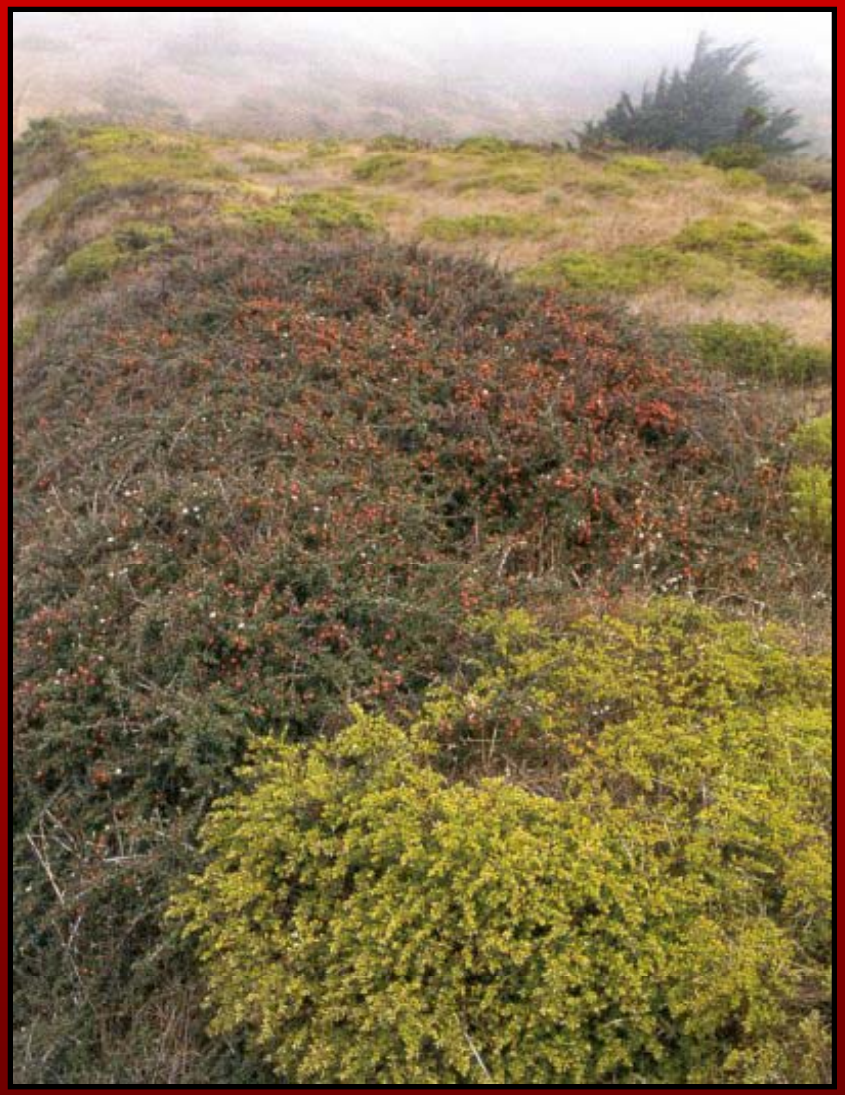


November

WHAT TO DO IN YOUR BACKYARD IN NOVEMBER:
Remove Cotoneaster, Iceplant and Beach grass. See HOW TO REMOVE listed in October and November.

Cotoneaster
(*Cotoneaster spp.)*
WHY REMOVE? Cotoneaster reduces habitat for burrowing rodents, for birds such as quail that require open grassy areas for seed foraging and for raptors, foxes or other carnivores.

Sun	Mon	Tue	Wed	Thu	Fri	Sat



HOW THEY SPREAD: Cotoneaster grows on sandy, clay or even serpentine soils. When cut it has the ability to re-sprout. Cotoneaster reproduces by producing berries that can germinate under parent plant, or that are spread by animals such as birds.

HOW TO REMOVE:

(CAN BE USED FOR MOST INVASIVES)

In the winter, Cotoneaster is most easily found for removal. Cutting of the plants close to the ground right after fruit set is the most effective method, as at this time the roots have the least reserves. Repeated cuttings of the shoots is required to prevent re-growth. Alternatively 10 mil black plastic could be placed over cut stumps for at least one year. Planting diverse native seedlings in place of removed plants is highly recommended on disturbed soil after removal of invasive species. Erosion control efforts should be made on vulnerable sites where invasive plants have been removed.

See erosion control recommendations and resources at beginning of calendar.

WHAT TO DO IN YOUR BACKYARD IN DECEMBER:
Remove Cotoneaster, Iceplant and Beach grass. See HOW TO REMOVE in October and November.

Giant Reed
(*Arundo donax*)
WHY REMOVE? Displaces habitat for wildlife and reduces insect diversity. Arundo increases nitrogen levels in soil, reduces groundwater due to its ability to transpire large amounts of water and increases erosion.

December

Sun	Mon	Tue	Wed	Thu	Fri	Sat

Arundo Being Removed from site on Soquel Creek in 2004

HOW THEY SPREAD: Spreads mostly due to continued growth of rhizomes; some seed germination has been documented in northern California. Rhizomes can be transported by water, and if cut will re-sprout. Re-sprouts on disrupted sites and readily establishes on sand dunes and along stream banks.

HOW TO REMOVE: Stalks can be cut down with chain saw or machete, the stalks can either be left on top of roots or taken elsewhere. Once all Arundo has been cut, one layer blue reinforced tarp and black 10 mm black plastic should be laid on stumps and stalks with sandbags around the edges. Roots do readily re-sprout and in some cases are known to puncture the tarp. Other methods include injecting or painting appropriate herbicide on root tops after cutting, or completely pulling roots out of the ground. Herbicide application should not take place when Arundo is growing directly in the water. Erosion control should begin on all new exposed ground, the tarps or the painted roots should be left for a year or two. Then planting of diverse native plants should occur to help prevent re-growth of the Arundo.

Arundo stumps covered with blue tarp, black plastic and edges lined with sandbags. Site on Soquel Creek.

Resource Conservation District of Santa Cruz County

Helping people protect, conserve, and restore natural resources through information, education, and technical assistance programs.

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the Community Foundation of Santa Cruz County

NRCS

The USDA is an equal opportunity provider and employer.

References and Resources for Restoring Native Plants:

1. Local USDA Natural Resources Conservation Service and Santa Cruz County Resource Conservation District Partnership office (831) 464-2950 or sccrcd@sccrcd.org
2. California Invasive Plant Council, http://www.cal-ipc.org/
3. Agriculture and Natural Resources, University of California Davis Invasive Plant List, http://ucce.ucdavis.edu
4. United States Department of Agriculture, Natural Resource Conservation Service, Invasive Plant and Noxious Weeds, http://plants.usda.gov/java/noxiousDriver
5. California Native Plant Society, www.cnps.org
6. A Plague of Plants, a guide for controlling invasive plants in Santa Cruz County. Available at the Santa Cruz County Resource Conservation District.
7. Invasive Plants of California's Wildlands

by Carla C. Bossard, John M. Randall, Marc C. Hoshovsky - 2000

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