

# A PLAGUE OF PLANTS

CONTROLLING INVASIVE PLANTS  
IN SANTA CRUZ COUNTY

## **Wildlands Restoration Team**

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## Contents

The Problem .....	3
How You Can Help .....	5
French Broom .....	6
Scotch Broom .....	7
Other Brooms .....	8
Control of Brooms .....	9
Jubata Grass .....	10
Pampas Grass .....	11
Cape Ivy (German Ivy).....	12
English Ivy .....	14
Iceplant .....	16
Periwinkle (Vinca).....	17
Eucalyptus .....	19
Acacia .....	21
Himalaya Berry .....	23
Other Species of Concern.....	25
Black Locust .....	25
Poison Hemlock .....	25
Fennel .....	25
Gorse .....	25
Cotoneaster .....	25
Sticky Eupatorium .....	25
Forget-me-not .....	25
Thistles .....	26
Harding Grass .....	26
Kikuyugrass .....	26
Giant Reed (Arundo).....	26
Bamboo .....	26
Resources.....	27

## The Problem

Santa Cruz county is home to a unique and remarkably diverse ecological system. A meeting ground of northern and southern species, the Santa Cruz mountains support some of California's rarest life forms, including thirty-eight animals and twenty plants listed as threatened or endangered. Ten percent of all of California's endangered plants can be found nowhere else.

But biological diversity is being threatened by the invasion of non-native ("exotic") plants. An exotic plant is simply a species that has been introduced into an environment different from that in which it evolved. While not all exotics are a problem, some are invasive; these are capable of displacing other species, thereby leading to their demise. Having left behind the predators and competitors that kept them in balance with other species at home, invasive exotics can proliferate unchecked, like a cancer on the land. They act like a slow green oil slick covering our beaches, meadows, and forest floors, quietly eroding the underpinnings of our native ecosystems by hastening the extinction of one species after another.

The most invasive exotics can choke out native flora and provide no habitat value for native fauna. They can form impenetrable thickets or mats, shading out the seedlings of native plants, competing for nutrients and water, or even fundamentally changing the soil to favor their kind. Most insects, birds, and other animals have adapted to use relatively few plant species for food, shelter, or nest sites. A loss of their preferred species can result in their decline or even extinction. If a sufficient number of species are eliminated, or even a few "keystone" species, the whole ecosystem can collapse.

It can be hard to realize that something as beautiful as many of these plants are can slowly destroy other life forms which lie in its path. And because some have become such familiar sights--the feathery plumes of pampas grass, the profuse yellow flowers of French broom, the lush green carpets of vinca or english ivy, it can be surprising to see them as invaders that seemed to pose an unremarkable presence--and certainly an unrecognized threat-- as little as fifty or even twenty years ago.

The plants described in this booklet were brought here by humans in a variety of ways. Some were introduced deliberately for their ornamental beauty, some came as contaminants in animal feed or as stowaways on stock animals' hides or hooves. Others were introduced speculatively for their supposed value as timber, or for erosion control. Many were brought here because of their ability to grow quickly, giving them yet another powerful advantage in outcompeting and forcing out native species.

Each of these plants is invasive beyond the borders of Santa Cruz County. However, if you are working in an area far from this booklet's focus, you will want to consult other sources specific to your area. The species of greatest priority for removal will vary in other areas, and appropriate removal techniques may vary as well. The California Exotic Pest Plant Council and the California Native Plant Society are excellent resources: contact information for these organizations appears in the Resources section in the back of the book.



## How You Can Help

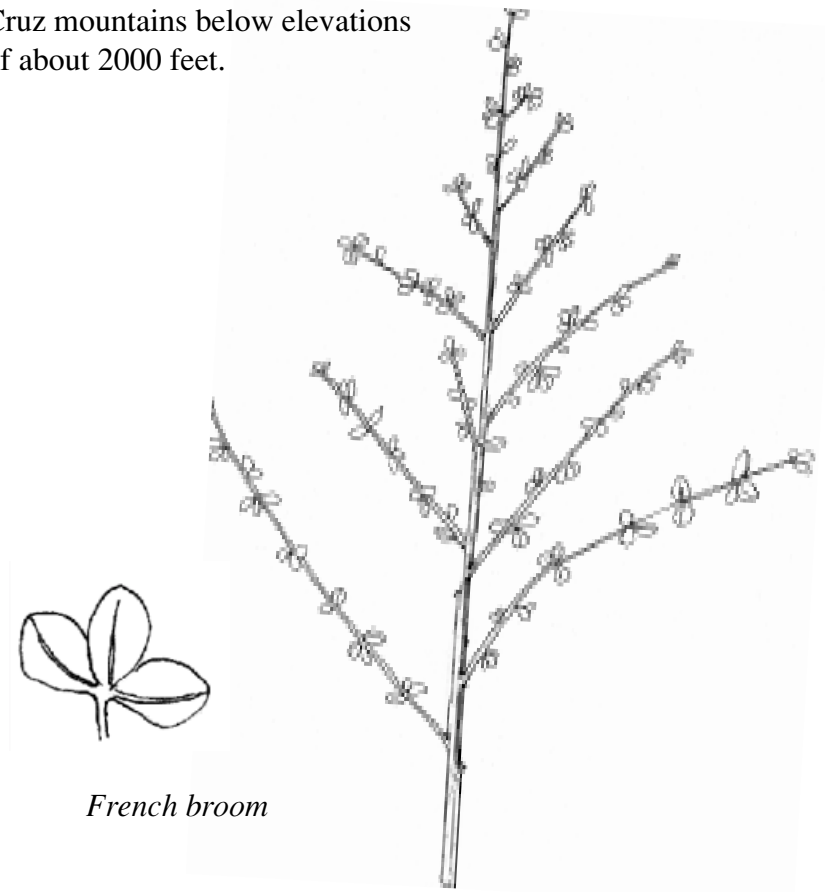
This booklet is designed to help landowners and concerned individuals recognize and remove the most invasive exotic plants which are likely to be found in settled areas of Santa Cruz county and give them the practical knowledge to control these cancers on our land using non-chemical methods wherever possible. Each plant is described and appropriate methods for removal, disposal, and follow-up are discussed. The information is based on methods developed by the Wildlands Restoration Team, a volunteer organization which has over 50,000 hours of experience in controlling these invaders on local state parks lands.

The first step in eliminating the damage caused by invasive plants is to avoid bringing them to your property in the first place. There are many sites throughout our county where the only trace of an old homestead is another slowly creeping patch of Vinca or English Ivy, or an ever expanding thicket of French Broom or Acacia. Some of our most invasive species were initially introduced as landscape plants, and many of them can still be purchased from local nurseries. You can make a difference by simply not buying these plants, informing your neighbors of their dangers, and encouraging your local nursery not to carry them. We will provide this booklet on request for nurseries to have on hand for customers.

The next step is to remove the most invasive plants from your landscape and replace them; preferably with native plants, or at least with non-invasive exotics. In addition to being planted by unknowing individuals, invasive plants are spread by seeds carried far and wide by wind, flowing water, automobile and mountain bike tires, birds and animals and people, as seeds stick to our clothing as we walk. These plants are oblivious to property lines, and even if they are not presently a problem on your land, some of them will probably soon become one. Likewise, invasive exotic plants on your property pose a threat to neighboring wildlands and protected habitat. Finally, consider lending your hand or contributing to a group that works on public lands addressing this vital issue.

## French Broom      *Genista monspessulana*

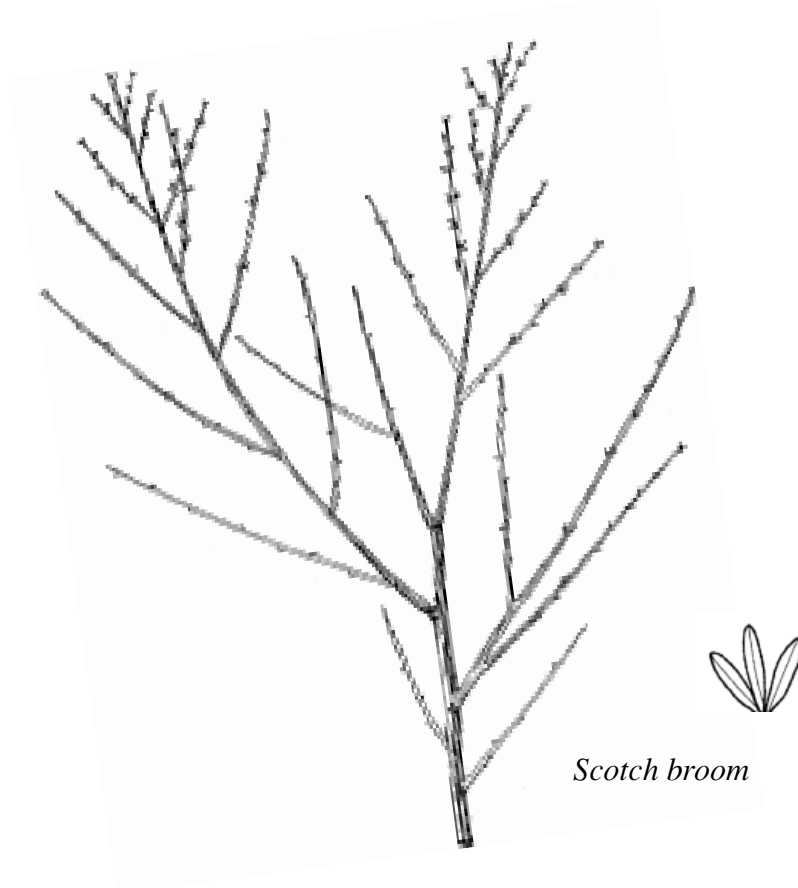
**Identification:** This familiar yellow-flowering shrub often seen along roadways is perhaps the most widespread invasive exotic shrub in our area. It often forms impenetrable thickets and is found in nearly all types of habitats. Mature plants can reach 15 feet or more in height and produce thousands of seeds each year. French broom has narrow stems that typically arch outward from a central leader and are covered with bright green leaves in clover-like sets of three. In early spring, plants in sunny locations can produce a showy display of yellow flowers, followed by small, pea-shaped seed pods. Though often mistakenly called Scotch broom, it is French broom that is by far the most common broom along coastal slopes of the Santa Cruz mountains below elevations of about 2000 feet.



## Scotch Broom

*Cytisus scoparius*

**Identification:** Scotch broom differs from French broom in its sparer overall look and its preference for hotter, drier sites. While French broom is often single-stemmed, Scotch broom usually has many branches near the base, giving the plant a rounder shape. The young stems of this plant have dark green, wing-like ridges. The flowers are larger, more fragrant, and a deeper yellow color than those of French broom. The leaves are grouped in threes, but are far less numerous than the leaves of French broom, and are often so small as to be unnoticeable from a distance, giving the plant the appearance of a tangle of nearly naked green-to-brownish stems. Scotch broom is found primarily at higher elevations in the Santa Cruz mountains and is more common on the inland side.

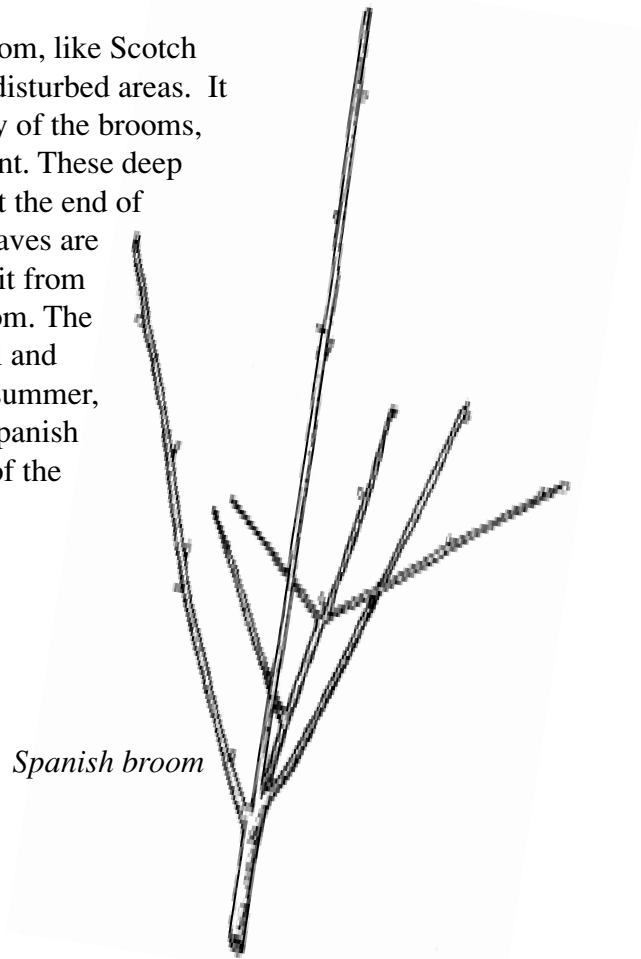


## OTHER BROOMS

### Spanish Broom

**Identification:** Spanish broom, like Scotch broom, is found in hot, dry, disturbed areas. It has the largest flowers of any of the brooms, and they are intensely fragrant. These deep yellow blossoms are borne at the end of round, smooth stems. The leaves are single, easily distinguishing it from both French and Scotch broom. The leaves are usually very small and sparse and are shed by mid-summer, leaving stems in full view. Spanish broom is the least common of the invasive brooms in this area.

### *Spartium junceum*



### Portuguese (Striatus) Broom

**Identification:** A recent arrival in our area, Portuguese broom is already invading local wildlands. It is similar in overall appearance to Scotch broom, but Portuguese broom has 8- to 10-sided twigs and inflated seed pods that are hairy all over, while Scotch broom has 5- to 6-sided twigs with flat seed pods that are hairy only along the margins, or edges.

### *Cytisus striatus*



## **CONTROL OF BROOMS**

**Removal:** For most people and on most sites, the most practical method for eliminating broom is hand removal. Winter and spring are the best times to pull broom, when moist soils make the plants easier to uproot, and the yellow flowers make the plant easy to see among other species on the site. Surprisingly large French broom plants can often be pulled without the use of tools, but if the stem breaks off leaving the root in the ground, it must be dug out. Other brooms tend to be more deeply rooted, but all can be removed with a shovel. If you dig out the main root down to 4 or 5 inches below ground, any side branches of the root which break off and remain in the soil will die. Large broom plants nearing their maximum age of 15 years age can often be killed by cutting them off at ground level. If you have a lot of broom, you may wish to purchase a tool called a Weed Wrench™, an excellent tool which makes the job fast and easy. They are available in four sizes directly from the manufacturer, New Tribe, at (541) 476-9492.

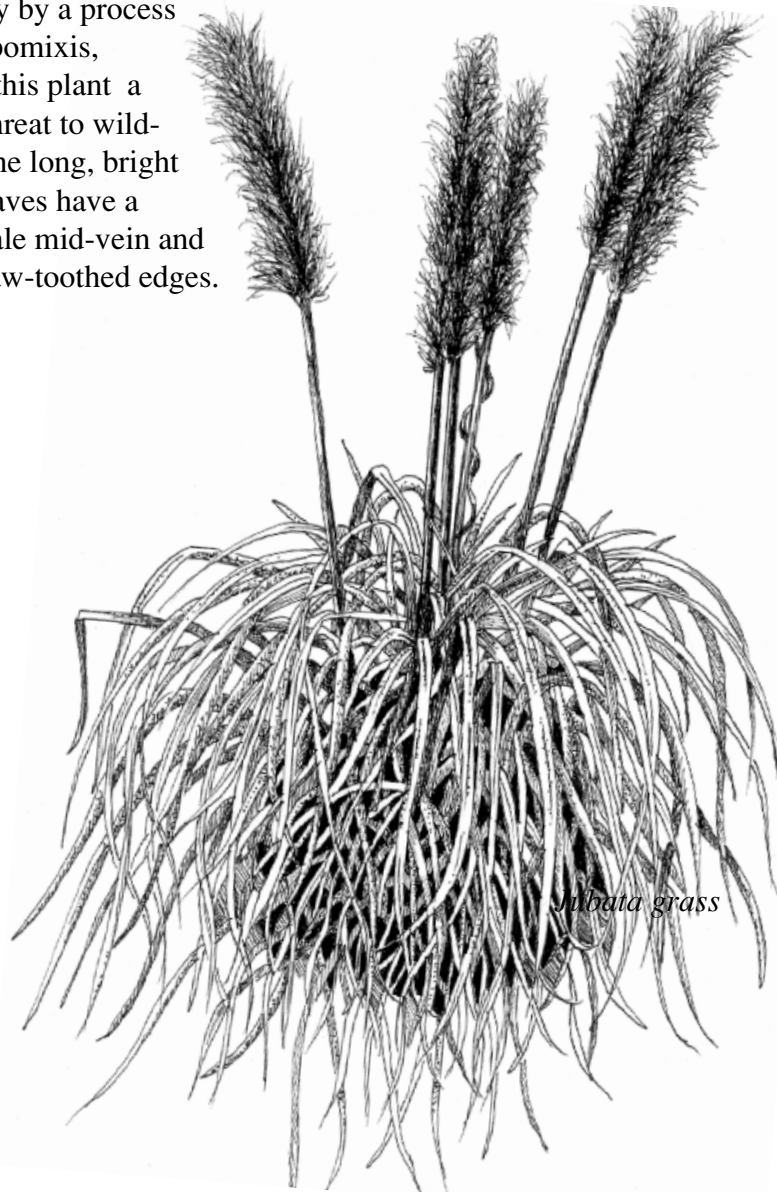
**Disposal:** Small plants that have not yet flowered are not of concern, but any plants that have set seed need to be handled with care to avoid spreading broom to yet another site. Stacking and burning broom is an ideal disposal method, as it eliminates the debris, and, if the fire is hot, destroys the seed at the same time. Another method is stacking the broom in deep shade, where any seeds still attached will not have enough light to germinate.

**Follow-up:** Since broom seeds may remain viable for decades, follow-up--in the form of yearly removal of seedlings is essential to prevent new seed set, while you gradually exhaust the existing seed bank with yearly repulling. Only a small percentage of the seed bank will germinate each year, so although there may be fewer plants to pull each year, eliminating this plant is a long-term effort. New broom plants typically do not produce seed the first year, so many sites may only require pulling every other year. Waiting a year allows the often extremely dense initial seedling growth to thin itself out by self-competition, resulting in less work for you, but it also increases the danger that seed will be produced if you miss re-pulling in the crucial following year.

## Jubata Grass

## *Cortaderia jubata*

**Identification:** This is the familiar giant grassy hummock with pale, feathery seed plumes seen taking over disturbed sites such as slides and roadsides throughout coastal California. Though *C. jubata* has become commonly referred to as pampas grass, that name properly belongs to *C. selloana*, a locally less invasive species described on the next page. The seed plumes of jubata grass are typically pinkish in color, and are borne high on long stalks well above the arching leaf mass, and can reach 15 feet in height, where the wind can distribute the light, fluffy seeds for miles. Each plume can produce hundreds of thousands of seeds asexually by a process called apomixis, making this plant a severe threat to wildlands. The long, bright green leaves have a single pale mid-vein and sharp, saw-toothed edges.



**Removal:** First, protect yourself from the sharp-edged leaves of this plant by wearing long sleeves and gloves. Cut off any flowering plumes and cover them with several inches of dirt; this will keep the seeds from being dispersed by wind and infesting new areas. On larger plants, cut away the leaf mass to expose the root crown, a tightly connected mass of dense, light brown tissue. The root crown must be completely removed since any part of it remaining in the ground can regenerate, but the many small root hairs connected to it can be left in place. Large root crowns are much easier to remove by separating them into smaller pieces with an ax or mattock and removing the pieces one at a time. Small plants can usually be pulled up by hand or removed with a shovel.



**Disposal:** Once the plant is out of the ground, shake the root crown free of dirt and turn it upside down, making sure the roots are out of contact with the soil; otherwise the plant may re-root.

**Follow-up:** An occasional check of the site and removal of any small plants that appear is all that is needed to keep an area free of jubata grass.

## **Pampas Grass**

## ***Cortaderia selloana***

**Identification:** True pampas grass, *C. selloana*, is most often seen in landscaped settings in our area and is not common in local wildlands. Pampas grass is not as weedy in our area as its close cousin, jubata grass, but it is the predominant invasive species further inland. *C. selloana* differs from jubata grass in having more slender, bluish green leaves which curl at the tips and a pale off-white or yellowish seed plume that is borne on a short stalk just above the leaf mass.

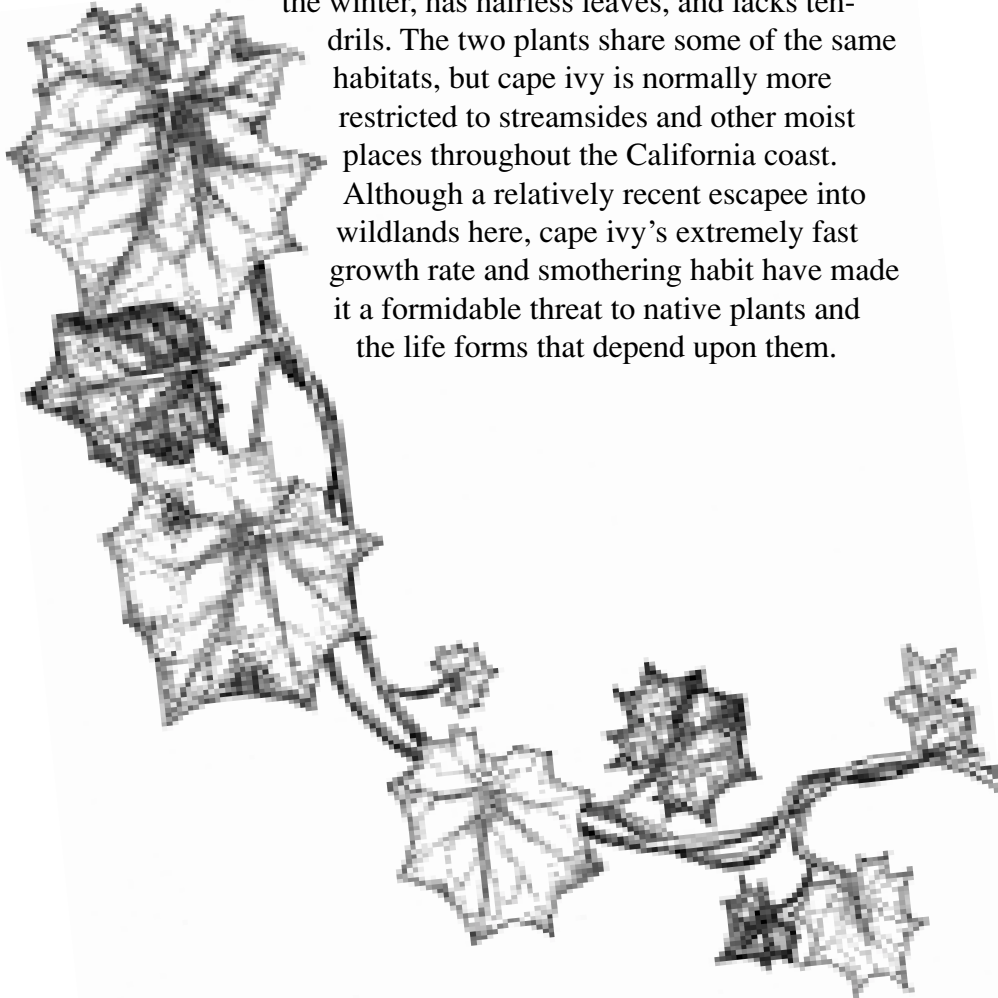
**Cape Ivy**  
(formerly German Ivy)

***Delaireia odorata***  
(formerly *Senecio mikanioides*)

**Identification:** This rampantly growing vine-like plant has smooth-surfaced, bright green leaves which have many points along their edges. It can climb to about 30 feet into trees and forms dense blankets of vegetation over everything in its path. Native to South Africa, cape ivy was until recently called German ivy. It is sometimes confused with the native wild cucumber, but there are several key differences: wild cucumber has white flowers which emerge in the spring, has hairs on its leaves, and has twining tendrils like a pea; cape ivy has yellow flowers which emerge in the winter, has hairless leaves, and lacks tendrils.

The two plants share some of the same habitats, but cape ivy is normally more restricted to streamsides and other moist places throughout the California coast.

Although a relatively recent escapee into wildlands here, cape ivy's extremely fast growth rate and smothering habit have made it a formidable threat to native plants and the life forms that depend upon them.



**Removal:** Though cape ivy is easy to pull, its fragile stems often break, leaving pieces in the ground which quickly resprout. In addition, any portion of stem that contains a node and is left in contact with soil can grow and reinfest a site. In order to effectively remove this plant, any other plants on the site--exotic or native--which interfere with seeing and reaching the ivy must be cut to the ground and cleared. Scraping off the duff layer will help remove small pieces of ivy still in the ground. This process may seem severe, but the return of native species will be rapid in these vigorous riparian zones. If this site clearing is neglected, much of the smaller cape ivy will be missed and the site will be rapidly reinfested.

**Disposal:** Because cape ivy reproduces vegetatively, its disposal is a problem. Cape ivy will remain viable as long as it has moisture. when stored in sealed garbage bags and left on hot asphalt in a sunny parking lot for many months! The surest way to kill cape ivy is to layer the plants up to 4" thick on a tarp to dry in the sun. Several months may be required for complete desiccation. Any plant parts left in contact with the soil should be closely watched and repulled whenever regrowth occurs.

**Follow-up:** Regular follow-up is essential to the control of cape ivy. It grows year-round, with a period of extremely fast growth in late winter and spring, during which time former work sites should be checked every 3 to 4 weeks for regrowth. During the rest of the year sites should be checked again every 2 to 3 months. Any plants found on follow-up visits must be carefully removed and disposed of to avoid leaving pieces behind. Since the areas in which this plant is found typically have nutrient-rich soils, rapid regrowth of other vegetation can hinder the job of spotting newly emerging cape ivy until it has grown too large for easy removal. Complete control may take many years, as this species may persist inconspicuously for a year or more on previously worked sites and then suddenly explode with new growth. In addition, pieces of cape ivy transported downstream during winter rains will take root where they come to rest, so long-term success may depend upon your ability to control the upstream source of cape ivy.

## English Ivy

## *Hedera helix*

**Identification:** English ivy--and its variants, Algerian ivy and Hahn's ivy--is the familiar groundcover commonly seen in yards and planting beds. Its leaves are dark green and waxy, typically have 3 to 5 points, and vary in size from 3 to 10 inches. Inconspicuous flowers are followed by dark purplish-black fruits which birds eat, dispersing the seed to new areas. English ivy eventually forms thick, fibrous mats on the ground, choking out all other plants as it creeps ever outward. It is most aggressive when climbing trees, where the stems can become large and woody, sometimes reaching diameters of a foot or more. These thick stems produce many small aerial rootlets which hold fast to the tree. Eventually, even the largest tree is killed in competition for light and nutrients. Because it is shade tolerant and is not dependent on disturbance to establish itself, this plant is slowly but surely destroying forested areas in which it is found. English ivy was often introduced into these wooded areas as a garden plant by former settlers.



**Removal:** English ivy can take a concerted effort to remove if it has been established for many years. The first and most important step is to cut any stems that are climbing trees, since this is where it grows most vigorously and produces seed. Because the seeds are spread by birds, this is a vital step both in preventing new infestations and in containing the ivy in its present area. We often find hundreds of newly emerging English ivy seedlings around the edges of infestations we are working on. Once the climbing vine has been cut, either its roots must be dug out of the ground, or, to

ensure that the roots will die, the cut surface of the stump end must be treated within a minute or so with a 1:1 solution of Roundup to water. Since these will typically be the largest roots and the hardest to dig up, if they are killed and allowed to decompose for some months before removal of the plants on the ground is begun, that job will then be easier. The upper end of the severed vine, which may reach the top of the tree, can be left in place and it will slowly die. Don't be impatient: it can take many weeks before the climbing portion starts to look like it's dying. If any living parts remain, start looking for small stems that were missed still clinging to fissures in the bark. Hand removal of plants on the ground is easiest in the winter and spring when soil is damp; stems can be pulled up one at a time or in clumps and traced back to their roots. If a thick thatch of stems has formed, cutting them apart will make removal easier. The roots will usually pull up with the rest of the plant, but digging may be required.

**Disposal:** English ivy can be left in piles to decompose, but piles in direct contact with the ground should be checked for resprouting.

**Follow-up:** A re-visit to the site after several months will reveal resprouting from any roots which were missed the first time. English ivy grows slowly, and once the roots have been eliminated the only follow-up necessary should be annual monitoring, with re-pulling of any new seedlings or regrowth.

## Iceplant

## *Carpobrotus edulis*

**Identification:** A native of South Africa, this leafy succulent plant forms nearly uninterrupted mats over much of California's coastal dunes. It has green, fleshy leaves, typically with reddish tips, that are triangular in cross-section and about 3 inches long. Flowers may be pink or yellow, with many long, narrow petals surrounding the central portion. It creeps along the ground, rooting as it goes.



**Removal:** Iceplant has a weak root system and is usually removed easily by pulling up its stems back to the main roots or by rolling it up in large mats. However, iceplant stores vast amounts of water in its leaves, making it quite heavy to carry. You'll want to consider this when selecting a place to stack the pulled plants.

**Disposal:** Once its roots are removed from the sand, iceplant can be piled in a convenient location. Piles should be made as tall and narrow as possible; there may be some resprouting from the piles, so contact with the soil should be minimized. Small portions of the plant can be left in place if they are simply flipped over so that their roots are in the air.

**Follow-up:** Iceplant reproduces from seed and grows quickly, making periodic checks of an area every 6 months or so important to its control. During these repeat visits any plants that have re-rooted can be removed and restacked.

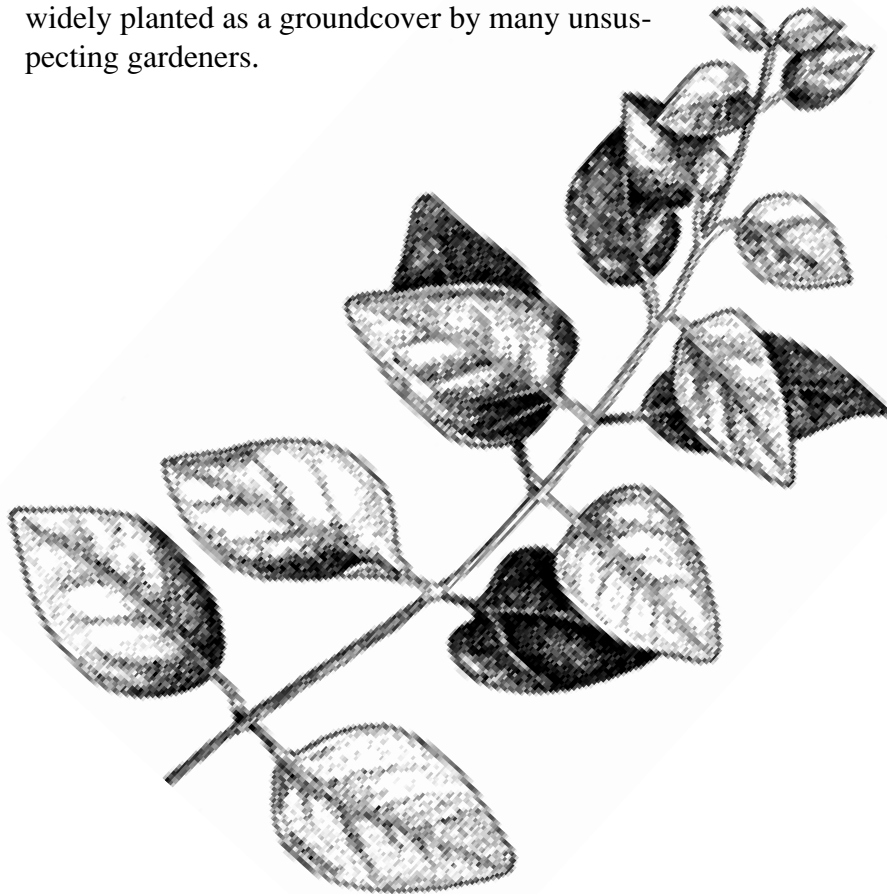




## Periwinkle (or Myrtle, or Vinca)

## *Vinca major*

**Identification:** This attractive groundcover with dark green, shiny leaves and bright periwinkle-blue flowers is familiar to all and is commonly called periwinkle, vinca, or myrtle. Many are surprised to learn it is a highly invasive noxious weed in wildlands. Vinca spreads by forming roots along many non-flowering stems which trail along the ground. It does not usually reproduce from seed in California. Though on hot inland sites it prefers shade, near the coast vinca grows in both shade and sun, forming solid carpets and excluding native vegetation. Vinca is tolerant of a wide range of conditions and is not dependent on disturbance to become established, making it one of the most pervasive threats to forested lands here in the Santa Cruz mountains; vast infestations of vinca are slowly taking over wildlands throughout the area. Introduced from Switzerland as an ornamental, Like most of the species discussed here, vinca is still commonly sold in nurseries and widely planted as a groundcover by many unsuspecting gardeners.



**Removal:** This plants' habit of forming dense horizontal mats of rooting stems can make hand removal difficult. These roots penetrate deep into the soil and will break off if pulled. Fortunately, it can be pulled relatively easily in the areas with a heavy layer of duff or in sandy soils. In heavy clay soil, pulling becomes less effective and the plants must be dug. On sites where it is practical, using a rototiller and then raking the site clean can be effective. If none of these methods will work, you may need to resort to using an herbicide. While this booklet does not council in the use of herbicides, a word of advice is in order: if you elect to use this method, be aware that you are applying a non-selective chemical which can kill any plant it touches. It has been shown that most people using herbicides do not adequately follow the instructions either in the handling of the product or in its application, making this potentially useful tool often more of a liability to the environment than an asset.

**Disposal:** Vinca can re-root if pulled plants are left on the ground. To avoid this, either spread them on a tarp in the sun or compost them in a closed container, turning often and checking to see that there are no living portions before using the compost.

**Follow-up:** Vinca will require regular follow-up regardless of which method is used. Whether you pull, dig, or spray, some typically comes back. Fortunately, this is not a fast-growing plant, and a six month check-up is probably all that will be needed after the initial treatment. However, this is a tenacious plant, and even after it has been completely eradicated from an area, a yearly check is recommended.



*flower*

**Eucalyptus**  
(or Tasmanian Blue Gum)

*Eucalyptus globulus*

**Identification:** Though some think this giant landmark tree with its smooth trunk and peeling bark and is native to California, it was introduced from Australia in the 1850s as a prospective lumber crop. This venture failed because this tree does not produce quality lumber in the northern hemisphere, but now vast acreages of eucalyptus remain. Blue gum is the most common eucalyptus in California and is found in a variety of ecosystems. It is most invasive in moist soils, where it effectively outcompetes native species for water. While some birds and butterflies can make use of its structure, the blue gum inhibits the coexistence of most other plant species and the life forms which depend on them, making this stately tree a significant threat to biological diversity. Eucalyptus can drop large limbs without warning and its large amounts of litter and volatile oils make it one of the most flammable forest fuels.



**Removal:** Removal of large trees is very costly, so controlling eucalyptus when they are young is particularly important. Small trees can be felled using a hand saw, but larger ones will require a chainsaw and professional expertise. Because eucalyptus will readily resprout from its cut stump, steps must be taken to kill the stump. One way to do this is to prevent any exposure to sunlight. If the stump is cut as close to the ground as possible, it can be covered with black plastic. The edges of the plastic must be completely buried, as any light which enters will allow life processes to continue. Alternatively, the stump can be treated immediately after cutting with a 1:1 mixture of Roundup to water to prevent stump sprouting. This must be completed within 1 or 2 minutes after cutting to be effective. Painting this mixture on with an old brush helps keep it from splashing on other plants or the surrounding soil.

**Disposal:** Eucalyptus makes excellent firewood and can be readily sold if cut and split, or given away free if you just want to get rid of it. A note on your local bulletin board may suffice to locate takers, or you can place a classified ad free of charge in *The Great Exchange*, a Santa Cruz advertiser, for items that are being given away.



*seed capsule*

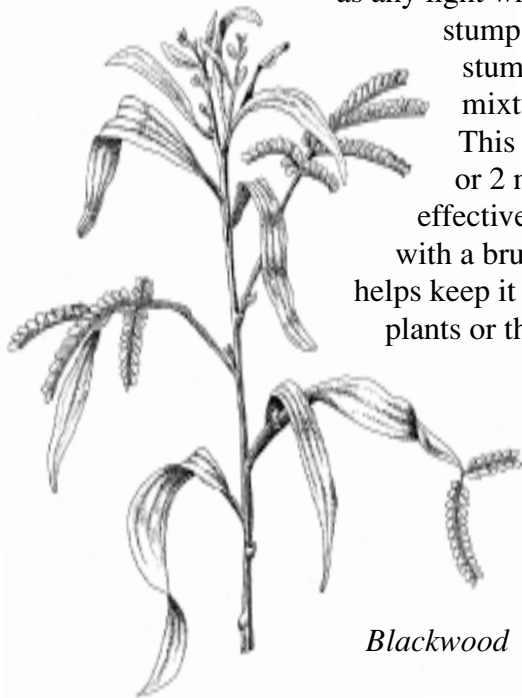
**Follow-up:** Usually after the initial removal very little follow-up is required. On some sites, however, there may be seedlings to remove. This can be done easily on an annual basis by hand pulling or with a Weed Wrench or shovel.

## Acacia

## *Acacia spp.*

**Identification:** There are several species of acacia present locally, and some of them can be extremely invasive. The one most commonly seen is *Acacia dealbata* (formerly *A. decurrens*), which forms dense thickets along roadsides throughout Santa Cruz county. *Acacia melanoxylon*, or blackwood acacia, can also be found locally, and a few other species are present here to a lesser extent. However, all are commonly referred to simply as acacia. These are small trees which do not usually grow over 30 to 40 feet tall. They have finely divided, feathery leaves and in late winter are covered in pale yellow flowers, which are followed by brown pea-shaped pods. These seed pods are so numerous that they often form a layer of red-brown duff under older trees. Acacias are weak-wooded trees that often split, shed limbs, or fall over.

**Removal:** Very small trees can be pulled or dug out, but larger ones must be cut. Because Acacia readily resprouts both from the cut stump and from lateral roots connected to it, steps must be taken to kill the stump and its root system. One way to do this is to prevent exposure of the stump to sunlight. Cut the stump level and close to the ground, and cover it with one or more layers of 10 mil black plastic. The edges of the plastic must be completely buried, as any light which enters will keep the stump alive. Alternatively, the stump can be treated with a 1:1 mixture of Roundup to water. This must be completed within 1 or 2 minutes after cutting to be effective. Painting this mixture on with a brush rather than spraying helps keep it from contacting other plants or the soil.

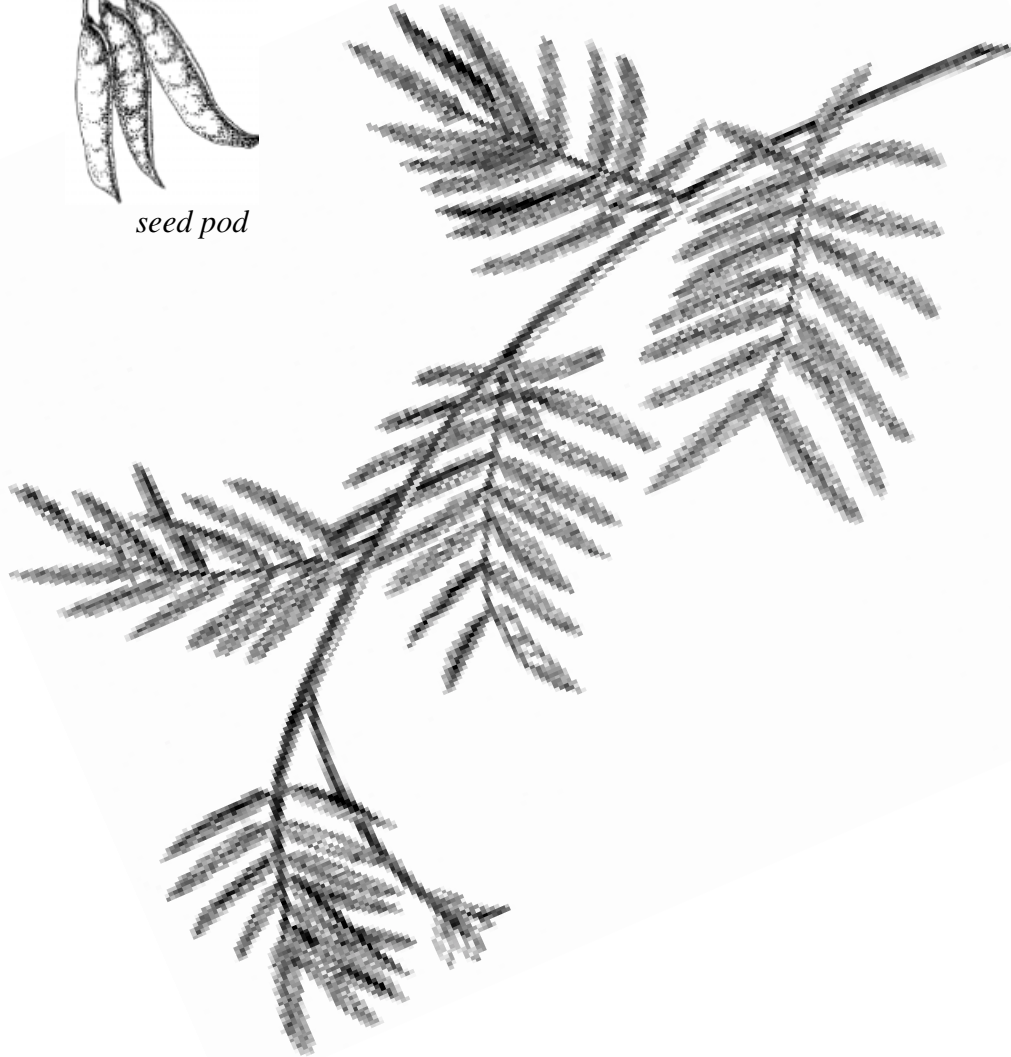


*Blackwood acacia*

*Acacia (Green Wattle)*



*seed pod*



**Follow-up:** Acacia spreads by sending up new shoots from lateral roots as well as from seedlings, so the site must be revisited once a year or so to remove any new growth. Seedlings can easily be pulled by hand when small, but sprouts from lateral roots will have to be dug out together with the connecting root.

## Himalaya Berry

*Rubus procerus*  
(*Rubus Discolor*)

**Identification:** This rank-growing blackberry is similar in appearance to our native blackberries, but is larger in size and has thicker stems with very large, stiff thorns all along them. In addition, the leaf typically has five lobes, whereas the native blackberries typically have three. It spreads by seed and vegetatively by underground runners (rhizomes). It is faster growing than our native blackberries, and can be found in a wide variety of habitats throughout the area.

**Removal:** The first thing to do when preparing to tackle this well-armored plant is to put on heavy clothing and thick leather gloves. Cut off the canes, or stems, one at a time to within a few inches of the ground and remove them. Then the central cluster from which the canes are growing can be dug out with a mattock or shovel. There may be long lateral rhizomes connecting one cluster to another, and these must be pulled or dug up with the roots. Shake the roots free of any dirt that remains and stack them with the canes.

**Disposal:** The easiest way to deal with this gnarly stack of sharp spines is to burn it, so if you have a suitable place for burning do your stacking there and you will avoid having to handle the thorny canes more than once. If you cannot burn them but have an out-of-the-way place in which they can be allowed to slowly break down, they can be stacked there. Be sure to remove all the berries before stacking, to prevent a new infestation. If you have no suitable place either to burn or store them until decomposed, cut the canes into lengths short enough to be placed in yard waste cans for pickup.

**Follow-up:** If you missed a few of those roots the first time, you may find vigorous re-growth which will need more thorough re-digging. If the root systems were completely removed initially, the only follow-up needed will be a visit to the site once a year or so. Any new seedlings can be easily dug out when small, or even pulled by hand--but use those thick leather gloves!



*Himalaya Blackberry (Rubus Discolor)*



## Other Species of Concern

Following is a list of some other invasive species that are present locally and may become a problem on your land. This list is by no means complete; there are many other species which may prove invasive to varying degrees where site conditions dictate.

**Black Locust**, *Robinia psuedoacacia*. This large deciduous tree with deeply furrowed gray bark and compound leaves is found in scattered locations throughout our area, sometimes forming dense stands which can exclude most other plants. It spreads both by seed and by root shoots. Control is similar to that for Acacia.

**Poison Hemlock**, *Conium maculatum*, is a biennial which is particularly troublesome in this area. Its relative **Fennel**, *Foeniculum vulgare*, an aromatic perennial, is also present here. Both have finely divided leaves borne on tall, hollow stalks and are common invaders of open slopes and fields. Control is achieved by mowing in closely timed cycles to prevent seed production.

**Gorse**, *Ulex europaea*. This large shrub with stiff spines and pea-like pods is a close relative of the brooms. Removal techniques are similar to broom, but the vicious spines will require cutting off the branches before attempting manual removal. It has a deep root system and is very hardy, making it one of the most difficult plants to eradicate.

**Cotoneaster**, *C. franchetii*, *C. pannosa*, *C. lactea*. These large shrubs have dark green leaves with silvery undersides and bright red berries. They are common invaders of open areas and mixed woodlands. They have an extensive root system which makes hand removal difficult, so it's best to get them when they're young.

**Sticky Eupatorium**, *Ageratina adenophora*. This straggly, coarse perennial, still commonly sold in nurseries, is native to Mexico and is found in Santa Cruz county along streamsides, on outcrops, and on damp hillsides where it forms dense stands. It has a small root system and is easily removed by hand pulling.

**Forget-me-not**, *Myosotis latifolia*. Many people are surprised to learn that this common and attractive garden plant is invasive in wildlands. It is becoming an increasingly common sight along trails in the Santa Cruz mountains.

**Thistles.** Many species of non-native thistles are present here and may be invasive to varying degrees, usually in areas of ongoing disturbance. Particularly troublesome local species include **Italian Thistle**, *Carduus pycnocephalus*; **Bull Thistle**, *Cirsium vulgare*; and **Yellow Star Thistle**, *Centaurea solstitialis*. Thistles are normally annual or biennial, so the key to controlling them lies in preventing seed production. This can be accomplished by pulling or cutting the plants at ground level before flowers have opened. However, cut plants can produce another stalk in the same season, so a follow-up visit may be necessary. If seed has been produced, new plants may emerge on the site for 5 years or more.

**Grasses.** Europeans arriving in California brought with them many annual grasses which have forever changed not just the look, but the very fabric of grassland ecosystems throughout our state. This has caused the demise of most native grass species and many of the associated organisms dependent on them. In addition to these annual species, we also face an array of perennial grasses which have been introduced here.

**European Beachgrass**, *Ammophila arenaria*, was widely planted along the shores of the west coast from California to Washington because of its ability to stabilize sand dunes, a job it does well--so well that it has altered the characteristics of the dunes here so thoroughly that native plant communities can no longer flourish. This has led to a monoculture of European beachgrass on our beaches which has been a significant factor in the plummeting populations of the snowy plover, a federally listed bird which nests in the dunes. The snowy plover relies on long lines of sight to protect it from predators, something the 3 foot tall stands of beachgrass have eliminated.

Some other invasive perennial grasses found here are **Harding Grass**, *Phalaris aquatica*, and **Kikuyugrass**, *Pennisetum clandestinum*. Also in the grass family is **Giant Reed**, *Arundo donax*, which is a major problem in southern California and is moving north, and the **Bamboos**, *Bambusa spp.*, most of which are quite invasive and once established are among the most difficult of plants to remove.

## Resources

### California Native Plant Society

1722 J Street, Suite 17, Sacramento, CA 95814  
(916) 447-2677

[http://www.calpoly.edu/~dchippin/cnps\\_main.html](http://www.calpoly.edu/~dchippin/cnps_main.html)

- *Education, conservation, and scientific activities for the preservation of native plants in their natural habitat, with local chapters throughout the state. The website includes many useful links.*

### California Exotic Pest Plant Council

11591 Polaris Drive, San Diego, CA 92126

<http://www.igc.apc.org/ceppc/index.html>

- *CalEPPC's definitive list, "Exotic Pest Plants of Greatest Ecological Concern in California," is available on the website.*

### The Nature Conservancy

California Regional Office

785 Market Street, San Francisco, CA 94103

(415) 777-0487

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

- *The Nature Conservancy's publication "America's Least Wanted: Alien Species Invasions of U.S. Ecosystems" is available online at <http://www.consci.tnc.org/library/pubs/dd/>. Also available by mail or online at: [www.tncweeds.ucdavis.edu/](http://www.tncweeds.ucdavis.edu/) are "Element Stewardship Abstracts," each with information on a particular species.*

### Native Habitats

<http://members.aol.com/GStigall>

- *An online clearinghouse of habitat restoration organizations.*

### New Tribe

5517 Riverbanks Road, Grants Pass, OR 97527

(541) 476-9492

- *Manufacturers of the Weed Wrench™.*