

Web Resources

BugwoodWiki Invasipedia

<http://wiki.bugwood.org/invasipedia>

Bureau of Land Management (BLM)

<http://www.blm.gov/weeds>

CalFlora <http://www.calflora.org>

California Department of Agriculture (CDFA)

Encycloweedia https://www.cdfa.ca.gov/plant/IPC/encycloweedia/weedinfo/winfo_table-sciname.html

California Invasive Plant Council (CAL-IPC)

<http://www.cal-ipc.org>

California Native Plant Society (CNPS), North-coast Chapter <http://northcoastcnps.org>

Humboldt County Department of Agriculture

<http://co.humboldt.ca.us/ag/>

Humboldt County Weed Management Area

<http://www.cal-ipc.org/solutions/wmas/humboldt-wma/>

Redwood National and State Parks

<https://www.nps.gov/redw/learn/nature/exotic-vegetation.htm>

U.S. Fish and Wildlife Service's Plant Guide for Humboldt Bay's Dunes and Wetlands

https://www.fws.gov/refuge/Humboldt_Bay/wildlife_and_habitat/HumboldtPlants.html

Books

Bossard, C., J. Randall & M. Hoshovsky (eds.). 2000. **Invasive Plants of California's Wildlands**. Univ. of Calif. Press.

DiTomaso, J. 2003. **Aquatic and Riparian Weeds of the West**. Diane Pub. Co.

DiTomaso, J. 2007. **Weeds of California and other Western States (vols 1 & 2)**. Univ. of Calif. Agriculture and Natural Resources.

DiTomaso, J. 2013. **Weed Control in Natural Areas in the Western United States**. U.C. Weed Research & Info. Center

Whitson, T. 2006. **Weeds of the West (9th Edition)**. Diane Pub. Co.



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HWMA's FREE Lend-A- Wrench Program

Weed Wrenches™ are available for free check-out from the Humboldt Co. Weed Management Area (HWMA) for use by community members and organizations wishing to control invasive brooms and other woody shrubs.

Eliminate invasive shrubs in three easy steps:

1. Check out a Weed Wrench™ from the HWMA.
2. Pull out mature shrubs in winter or spring, when the ground is wet, and before seed set.
3. Monitor the site and remove seedlings as they occur.

Seeds of some shrub species (e.g., Scotch broom) can persist in the soil for decades, so diligent follow-up treatment is essential for successful eradication. Young seedlings are much easier to pull than mature plants.

Weed Wrenches™ are available at:

Bureau of Land Management Arcata Field Office
1695 Heindon Road (off Janes Road) in Arcata.
Call (707) 825-2300 for more information.



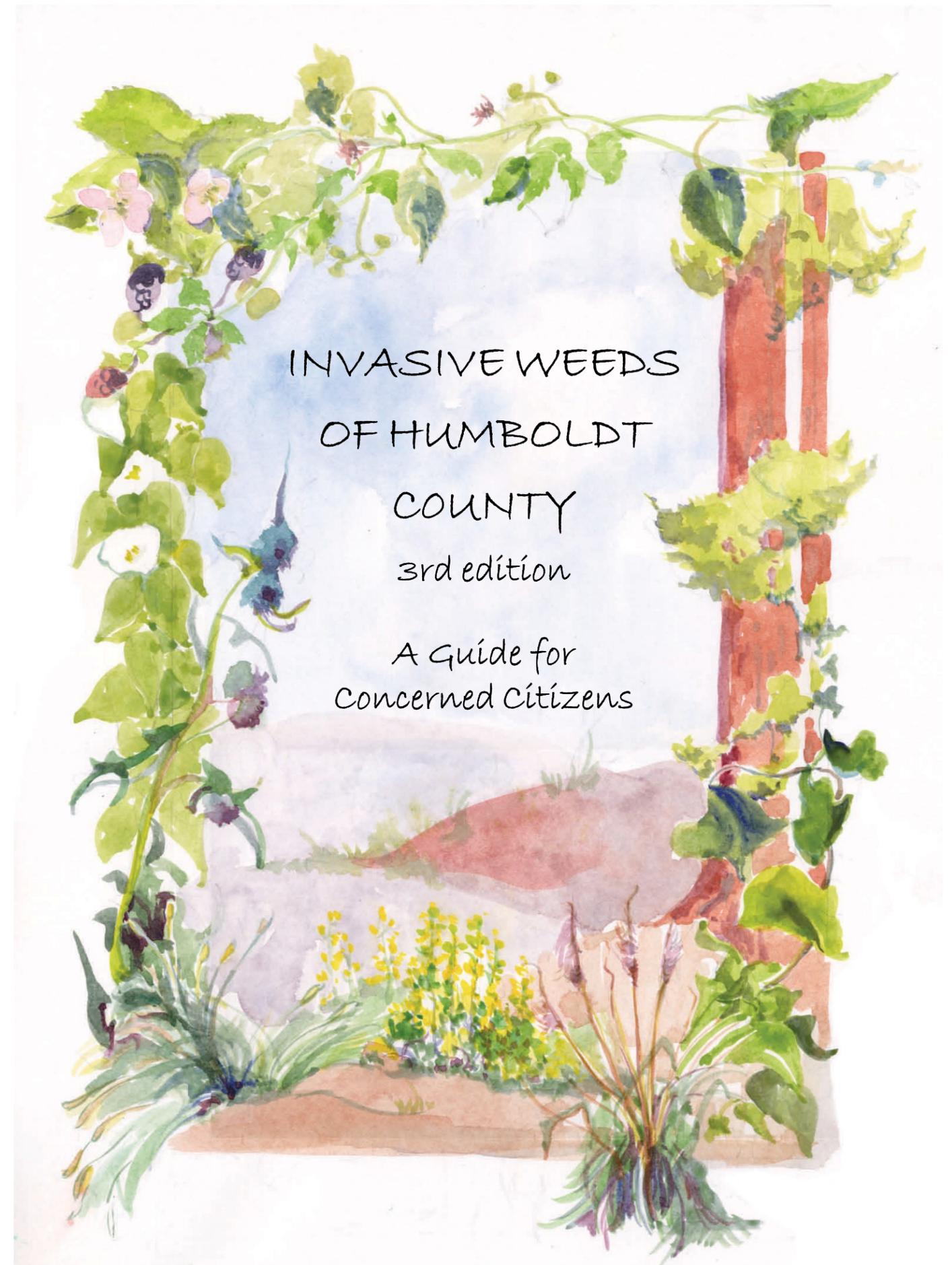
Humboldt Weed Management Area



Humboldt County Weed Management Area

Humboldt County Weed Management Area is a consortium of public agencies, non-profit organizations, and private citizens dedicated to the shared goal of reducing the impacts of invasive plants to natural and agricultural lands in Humboldt County, California.

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- ◆ An online version of this guide is available at the HWMA's website: <http://www.cal-ipc.org/docs/WMA/pdfs/InvasiveWeedsOfHumboldtCounty.pdf>





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English Ivy, pg. 13



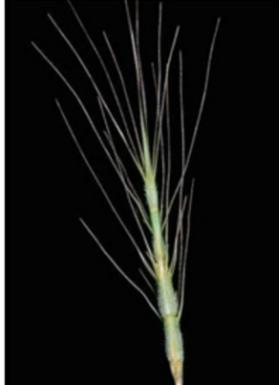
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Yellow Bush Lupine, pg. 5



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Barbed Goatgrass, pg. 6



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Pittosporum (Victorian Box), pg. 13



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Three-Cornered Garlic, pg. 13



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Foxglove, pg. 6



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Scotch Broom, pg. 8



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Parrotfeather, pg. 15



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Purple Loosestrife, pg. 15



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A melanoxylon:Floracatalana.net
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Introduction

What is an invasive weed?

For the purposes of this booklet, an invasive weed is a plant species that is not native to an area, and has a tendency to spread to a degree known to cause damage to the environment, economy, or to human/animal health. Over the past 150 years in California, many non-native plants have been introduced both accidentally and intentionally. Many do not pose an ecological threat, although some are able to reproduce in the wild and proliferate rapidly, causing local or regional ecological decline. Others invade agricultural lands, becoming pests that compete with crops, reduce forage values and increase management costs, and may be poisonous to livestock.

Why care about invasive weeds?

Invasive weeds:

- **Change the look of landscapes and function of ecosystems.** Invasive weeds often crowd out native plants and reduce diversity necessary to support wildlife and watershed stability.
- **Cost taxpayers and private landowners money.** Impacts to agriculture, forestry, recreation, and the general environment exceed billions of dollars annually.
- **Increase the risk of fire.** Prolific growth of some weeds, especially flammable woody plants and annual grasses, increase the risk and frequency of wildfires.
- **Reduce recreational opportunities.** Invasive weeds decrease access to recreational areas or directly degrade the aesthetic value of parklands.
- **Alter hydrology and impede water flows.** Aquatic invasive weeds can clog water-crafts and -ways, affect water quality, and interfere with aquatic food webs.
- **Change native soils chemically and physically.** Some invasive weeds release chemicals into the soil that make it hard for other plants to grow. Weeds can also physically alter soil structure and stability.
- **Disrupt wildlife corridors and displace resources necessary for wildlife survival.**
- **Contribute to the decline of native species.** Invasive weeds are a major driver of plant and animal species decline and/or extinction, primarily due to habitat loss from ecosystem conversion.

How to use this guide

This guide is intended to help you understand the problem of invasive weeds, identify them around your home and community, and take direct action to save our wildlands and protect our natural and agricultural resources from the threat of invasion.

Weeds are grouped by the primary habitat type that they invade in Humboldt County. However, weeds may also be found invading other habitat types.

Color photos are provided on the inside front and back covers of this guide, and are arranged in the same order as they appear in the text. In addition to the weeds presented here, many other invasive weeds occur in Humboldt County. To learn more about them, visit our webpage at <https://www.cal-ipc.org/solutions/wmas/humboldt-wma/> or consult the other web resources and books listed on the back of this guide.

 **Report new sightings of red alert weed species.** While most weeds listed here are widespread in Humboldt County, some are relative newcomers or have a limited distribution. Finding new infestations of “red alert” species and responding quickly is the most cost-effective means of control. Look for the red phone symbol throughout this guide to indicate which species to report. If you find them, please call the Humboldt County Department of Agriculture, (707) 441-5260, or e-mail at agcommissioner@co.humboldt.ca.us.

Plants that Invade Wetland Habitats

Parrotfeather (a.k.a. Water Milfoil)

Myriophyllum aquaticum (Water-Milfoil family)

Where you will find it: Freshwater ponds, ditches, and slow-moving streams

Description: Noxious perennial aquatic herb; feathery leaves forming whorls around the stem; rhizomatous root system; grows in water, but can extend up to a foot above the water surface.

What it does: Aggressive spread via vegetative propagation; forms dense mats that clog waterways, impede flows, alters food webs; lowers recreational use; creates ideal habitat for mosquito larvae.

How to get rid of it: Manually remove from garden pond, but do not dispose of parts into any natural water body.



Purple Loosestrife

Lythrum salicaria (Loosestrife family)

 [Call 441-5260 to report new sightings](tel:441-5260)

Where you will find it: Freshwater wetlands, streambanks; found along Eel River in Humboldt Co.

Description: Noxious, perennial herb, 1 - 6 feet tall; dense spikes of beautiful rose or purple flowers; whorled, 4 inch long leaves are lance-shaped. 100,000 - 2 million seeds per plant, viable for 3 years

What it does: Chokes freshwater wetlands across the U.S.A.; known as “the purple plague.” Seeds usually sink, but seedlings float to the water surface and can disperse to new sites.

How to get rid of it: Hand-pull or dig young plants. Bag seed heads to prevent spread. Aquatic-approved herbicides for large infestation.



South American Spongeplant

Limnobium laegivatum (Waterweed family)

Where you will find it: Small ponds, canals, creeks, rivers

Description: A floating to rooted stoloniferous perennial; thick, spongy, ovate to spatula shaped leaves with rounded tips on inflated stalks; small, solitary white flowers; fleshy, obovoid to ellipsoid berrylike capsules; hairy seeds.

What it does: Spongeplant multiplies rapidly and creates a solid floating layer over water, making waterbodies unsuitable for fish. Plant parts will clog pumps used for irrigation and are easily vectored on small boats to uninfected waters.

How to get rid of it: Hand removal, mechanical removal, and chemical treatment have all been used to manage this weed. Collected materials must be properly contained and disposed of to prevent additional spread. Early detection with rapid response is paramount to controlling this species.



Spartina (a.k.a. Cordgrass)

Spartina densiflora (Grass family)

Where you will find it: Coastal salt marsh

Description: Perennial grass, 1 - 5 feet tall, clumped; invades tidal marshes from California to Washington; it has stiff leaves with flower stalks taller than the leaves.

What it does: *Spartina* alters the physical structure and biological composition of tidal marshes, and it is difficult to restore the native salt marsh communities without more intrusion by *S. densiflora*.

How to get rid of it: Recent coast-wide efforts to eradicate all invasive *Spartina* species evolved to a regional eradication plan for *S. densiflora* in Humboldt Bay. Local researchers at the Humboldt Bay National Wildlife Refuge adopted an effective method of repeated, sub-surface root cutting using brush-cutters and cutting or burning new seedlings. Chemical control with aquatic herbicides has been successfully implemented in other major bays on the western shores of North America.



Plants that Invade Streambanks

Giant Reed

Arundo donax (Grass family)

Where you will find it: Freshwater wetlands, river beds, canals, adjacent terrestrial sites

Description: Bamboo-like perennial to 25 feet tall; thick rhizomes; broad, alternate, flat leaves to 2 feet long x 2 inches wide; purplish, panicle flowers.

What it does: Displaces natives; flammable (fire-adapted); large stands significantly increases water loss.

How to get rid of it: Rhizomes must be completely removed/killed to eradicate infestation; tarping may work if it extends past the length of any rhizome growth; chemical treatment generally considered necessary.



Japanese, Himalayan, and Giant Knotweed

Fallopia japonica, *Persicaria wallichii*, and *F. sachalinensis* (Buckwheat family)



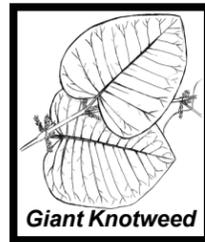
[Call 441-5260 to report new sightings](tel:441-5260)

Where you will find it: Streambanks, freshwater wetlands, moist roadsides areas

Description: Perennial herbs, invasive, with large, alternate leaves set on hollow, zig-zagging stems; long, creeping, rhizomatous roots. Japanese: ~ 9 feet tall, with stalks of tiny white flowers; oval leaves 4 - 6 inches long, 2/3 as wide. Himalayan: ~6 feet tall with stalks of small, fragrant, white to pink flowers; narrow, lance-shaped leaves up to 8 inches long, less than 1/2 as wide. Giant: ~12+ feet tall with stalks of small, greenish-white flowers and broad leaves 8 - 16 inches long, 2/3 as wide, with a heart-shaped base.

What it does: Knotweeds displace creek-side native plants with their thick uniform growth; fragments can grow into new plants. Seasonal winter die-back of plants results in bank erosion and sedimentation into waterways.

How to get rid of it: Young infestations may be controlled manually (remove ALL portions of the plant, especially the roots). In dense infestations, chemical control has been effective by foliar spray or stem injection.



Periwinkle

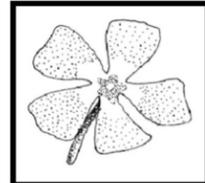
Vinca major (Dogbane family)

Where you will find it: Streambanks, coastal forests, woodlands, old homesteads

Description: Spreading, low-growing, perennial vine; bluish-purple, very distinctive, windmill-shaped flowers. The shiny, dark green leaves are arranged in pairs on the stem.

What it does: Vigorous spreader that outcompetes natives, rapidly forming dense mats that smother other plants; reproduces from fragments of the sprawling stems that root at the nodes; especially aggressive along streambanks, where stem fragments are transported by stream flows.

How to get rid of it: For small infestations, cover with black plastic for one to two growing seasons. You can also pull it, but be careful to get all fragments, and remember to go back and check for re-sprouts.



Tree-of-Heaven

Ailanthus altissima (Quassia family)



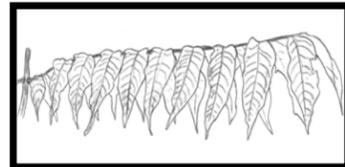
[Call 441-5260 to report new sightings](tel:441-5260)

Where you will find it: Disturbed streambanks and woodlands

Description: Deciduous tree, 30 - 65 feet tall; large, compound leaves 1 - 3 feet long; resembles Oregon grape as a young plant; produces clusters of small greenish flowers; prolific seed producer (winged samaras). When crushed, tree of heaven foliage has an unpleasant odor.

What it does: Tree-of-heaven spreads prolifically, forming dense thickets that displace native plants.

How to get rid of it: Best to catch infestations early when whole plants can be removed. Once mature, cutting promotes extensive suckering from roots and cut stump; repeat regularly and/or use in combination with chemical control.



Introduction

What can you do?

Control invasive weeds at home and in your neighborhood.

You may have invasive weeds already growing in your backyard. Wind, water, birds and other animals that eat the seeds of these plants can disperse them in nearby natural areas or rangelands. You can help stop these invasions by removing the source plants. Use the tips in this guide for control methods, and share what you have learned with friends and neighbors. Carefully dispose of the plants you remove so as not to inadvertently spread the plants. You will most likely need to follow-up initial efforts with additional treatments. Persistence is the key to any effective weed control program.

Don't plant invasive species.

Be selective when you choose plants for home landscaping. Some invasive plants are still sold in nurseries and garden shops, so beware! If you plant these in your yard they may escape into nearby natural areas. There are many beautiful horticultural plants available for you to choose from that are not invasive. Consider planting native plant species in your home garden. Natives offer a good choice for home landscaping because they are well-adapted to local conditions, and often thrive with less care and water than required by many non-natives. Native plant gardening enhances the value of your yard for local wildlife, including birds, bees, and butterflies. Check web resources on the back cover for suggestions.

Help prevent the accidental spread of invasive weeds.

When you venture into natural areas, be aware that you could be introducing invasive weeds inadvertently. After driving, hiking, biking, boating, or working in areas with invasive weeds, clean your shoes, socks, clothing, backpack, bicycle, pets, kayak, or anything else that might be a carrier of weed seeds. **Never** dump aquarium plants into natural water bodies or storm drains!

Participate in organized weed cleanup activities.

Watch for announcements and opportunities to participate in local community workdays aimed at controlling invasive weeds. Many land managers sponsor volunteer events to help pull invasive weeds on public lands. This is a good chance for you to learn to identify invasive species and to learn about the native plant communities that you will help save.

Educate yourself about integrated pest management.

Integrated pest management is a strategy based on using a combination of techniques to achieve the most cost-effective results with the least detrimental impacts to the environment, non-target species, and people. There are many factors to consider, including the unique characteristics of the target weed and of the infested site. For small infestations, manual or mechanical methods are often a good place to start. With some species, however, these methods may make matters worse by inadvertently spreading the plant. In large infestations, mechanical methods can cause soil erosion. Other methods to consider include repeated mowing, smothering, burning, chemical control, biological control, and/or revegetation with native species. Often, a combination of methods is the most effective, and understanding how each weed reproduces is critical to learning how to control it. Here are commonly used plant terms:

Herbs are plants that lack woody tissue.

- **Annual** herbs germinate, grow, reproduce, and die within a single growing season.
- **Biennial** herbs produce vegetative growth their first year, flower and produce seed their second year, and then die.
- **Perennial** herbs are longer-lived, typically flowering each year, and even though their above-ground parts may die back over winter, their roots survive from one year to the next.

Shrubs and trees are woody plants.

- **Evergreen** shrubs and trees keep their leaves all year.
- **Deciduous** shrubs and trees lose their leaves during part of the year, typically during winter months.

Plants that Invade Coastal Sand Dunes

Bermuda Buttercup (a.k.a. Sourgrass)

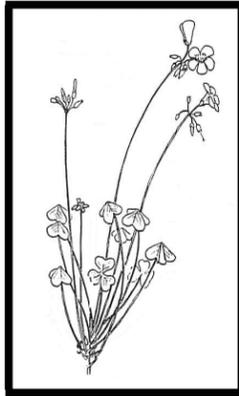
Oxalis pes-caprae (Oxalis family)

Where you will find it: Coastal dunes, grasslands, woodlands, gardens, urban and agricultural areas.

Description: A low-growing perennial bulbous plant with clover-like, tri-foliolate leaves, yellow flowers, to ~ 14 inches tall; slender rhizomes; flowers 1 - 1.5 inches wide on a leafless stalk; bulbs and bulblets readily detach from rhizomes, which is the basis for the invasive nature.

What it does: This plant invades native coastal dunes and natural areas along the coast, via the production of bulbs and movement of contaminated soils into adjacent areas. Buttercup oxalis produces soluble oxalates that can be lethally toxic to livestock, if ingested in large quantities.

How to get rid of it: Hand pulling can provide control, but the entire plant, including underground bulbs, must all be removed. Repeated tillage can control or minimize bulbs. Grazing and burning are not considered effective. No known biological control.



Biddy-Biddy

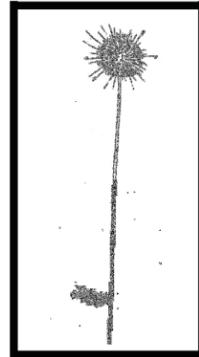
Acaena novae-zelandiae (Rose family)

Where you will find it: Stable dunes, open scrub, grasslands, trampled sites, disturbed areas

Description: Herbaceous perennial with woody stolons that root at nodes; bur-like seed heads; stems prostrate to erect; plants grow in clusters, forming large mats; leaves alternate, pinnately compound, 1 - 2 inches long, 7 - 11 leaflets; spherical flower heads approximately 1 inch diameter; hairy seeds have four, long, barbed spines.

What it does: The dense mats can smother and out-compete native, coastal species. Seeds are moved long distances by clinging to animal fur.

How to get rid of it: Mechanical damage of mature plants encourages stolons to produce new shoots. Flower heads cut before fruits mature do not produce viable seed. There has been very little information published on the use of herbicides for controlling this plant.



Crocsmia (a.k.a. Montbretia)

Crocsmia x crocosmiifora (Iris family)

Where you will find it: Coastal sand dunes, disturbed areas, roadsides, coastal scrub, prairie and forests.

Description: Evergreen, perennial growing from basal, underground corms; sword shaped, alternate leaves, parallel veined, entire margins; bright orange to red-orange inflorescences of 4 - 20 opposite flowers.

What it does: Crocsmia is a superior competitor for water, light and nutrients, and it excludes native plants by growing in dense patches. It reproduces using seeds and underground corms. Upon introduction to a new area, crocsmia spreads slowly at first, then more rapidly as the species becomes established, forming a dense, deep mat.

How to get rid of it: Dig out the corms and roots to about one foot deep, using a rake or a mesh screen to thoroughly remove corm fragments. Remove new re-sprouts as necessary throughout the growing season. Chemical control may be useful on large, dense infestations.



Plants that Invade Forest Habitats

Cape Ivy (a.k.a. German Ivy)

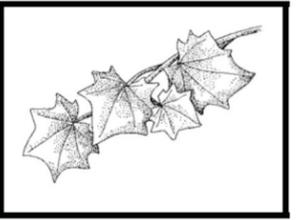
Delairea odorata (Sunflower family)

Where you will find it: Coastal forests, streambanks, disturbed shady sites

Description: Perennial vine; not a true ivy, it has ivy-like, waxy leaves, which are yellow-green with sharp points, and produces tiny yellow flowers. Cape ivy creeps over the ground and climbs trees and shrubs; it may die back in dry summers.

What it does: Cape ivy smothers native plants. It has creeping stems that root at the nodes. Plants contain liver toxins and can be toxic to animals; fish can be killed when plant materials are soaking in a watercourse.

How to get rid of it: Cape ivy is especially problematic because the vines break easily when pulled, and the plants can reproduce from stem fragments containing root nodes. Cover dense infestations with black plastic.



English Ivy

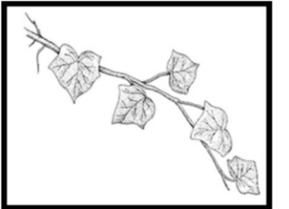
Hedera helix (Ginseng family)

Where you will find it: Open forests, streambanks.

Description: Perennial woody vine, with deep green, waxy leaves; forms dense ground cover, climbs on most surfaces; It has two growth forms: vegetative having triangular leaves with 3-5 distinct lobes, and reproductive with rounder leaves, upright stalks, and producing clusters of small white flowers and dark blue fruits.

What it does: English ivy smothers other plants; it climbs and damages fences, walls, and trees; trees may be girdled. Dense infestations add weight to trees and can make them topple. Birds consume the fruits and redistribute viable seeds. It may take time, but this ivy will kill alder, spruce and redwoods trees, so don't delay in removing the vines.

How to get rid of it: Where growing on the ground, pull out the vines and grub out the roots. For tree infestations, cut about a one-foot section out of the ivy stems near the base, taking care not to harm the trunk of the infested tree. The remaining aerial portions of ivy will die and are easier to pull out later.



Pittosporum (a.k.a. Victorian Box)

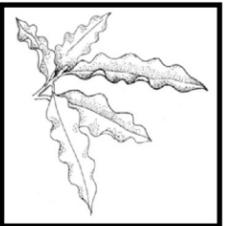
Pittosporum undulatum (Pittosporum family)

Where you will find it: Forests, shrub-lands, streambanks

Description: Evergreen, round-headed tree to 45 feet tall; popular landscape tree; long, pale-green, leaves with wavy margins; fragrant, cream-colored flowers and marble-sized, orange fruit.

What it does: This tree has escaped from home gardens into local forests, where it is spreading rapidly, displacing native plant species.

How to get rid of it: Simply cutting down this tree will eliminate it, as it is not known to re-sprout from roots. Regeneration from seeds may need attention in following years.



Three-Cornered Garlic (a.k.a. Welsh Onion)

Allium triquetrum (Onion family)

Where you will find it: Forests; wet, shaded areas; disturbed areas; turf, meadows

Description: Perennial bulbs with grass-like leaves; strong onion/garlic odor when crushed; leaves three-sided flower stems; white, bell-shaped flowers that hang down.

What it does: Forms dense population that displaces native plants. Contains compounds that destroy red blood cells; toxic to animals when ingested in large amounts, causing anemia.

How to get rid of it: Bulbs are hard to eliminate; repeated cultivation every 2-3 weeks from late fall through spring for several years depletes bulb energy reserve. Chemical treatment just before flowering combined with cultivation in late summer or fall can give good control, but may need to be repeated for several years.



Plants that Invade Forest Habitats

Acacia

Acacia spp. (Pea family)

Where you will find it: Disturbed areas, forests, old homesteads, roadsides

Description: About 800 *Acacia* species exist, ranging from low-growing shrubs to tall trees. Many make attractive landscape plants with their unusual forms, green to grayish-green foliage and clusters of yellow, white or orange flowers that typically bloom in winter.

What it does: Aggressive root systems and plants produce lots of viable, long-lived seeds; invades native plant spaces, spreads quickly, alters the nitrogen in the soil such that native plants can no longer grow in the area. Pollen from *Acacia* is a common winter-time allergen.

How to get rid of it: Pull small seedlings with a weed puller; most manual removal choices of large trees are not successful, and causes increased spread; chemical treatment is a viable alternative.



Butterfly Bush

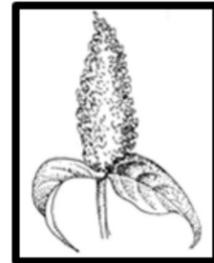
Buddleja davidii (Buddleja family)

Where you will find it: Open disturbed sites, woodlands, streambanks

Description: Deciduous or semi-evergreen shrub/tree, 5 to 15 feet tall; cylindrical heads of purple flowers that resemble lilac; narrow, pointed leaves. It is planted as an attractive ornamental plant, but it can become a pest in your own garden, your neighbors' gardens, and in nearby wildlands.

What it does: It outcompetes native plants for nutrients and water. It is pollinated by butterflies, and produces prolific seeds which are dispersed by wind, water, animals, clothing, and vehicles.

How to get rid of it: Be persistent as this shrub readily re-sprouts from the base. You can dig out entire plants, including the roots, or cut the plants at ground level and treat the stumps chemically, or cover with black plastic until they die.



Cotoneaster (Orange and Silverleaf Cotoneasters)

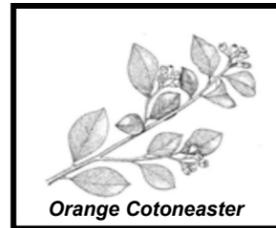
Cotoneaster franchetii and *C. pannosus* (Rose family)

Where you will find it: Forests, shrub-lands, and grasslands near the coast

Description: Evergreen shrubs 4 to 10 feet tall; *C. franchetii*: green leaves, pink flowers, orange fruits. *C. pannosus*: deep green leaves with silver undersides, white flowers, and clusters of red fruit. Both species are planted as ornamentals. Birds consume the fruits and contribute to spreading the seed.

What it does: The species have naturalized in local coastal forests. They spread rapidly and become a major problem as they displace native shrubs, with a dense crown that shades out most low-growing plants.

How to get rid of it: Remove plants by cutting near the base and pulling up or digging out the roots. Cotoneaster re-sprouts from the base, so grub out as much of the roots as possible. Remove plants before berries form to limit the spread of new seeds.



English Holly

Ilex aquifolium (Holly family)

Where you will find it: Moist, forested areas, urban areas, roadside

Description: Evergreen shrub or tree, up to 40 feet tall; popular yard tree that spreads into local forests. Holly has dark, shiny, green, lobed leaves with spiny tips. Holly trees have separate male and female plants (females produce red berries used in Christmas floral arrangements and wreaths).

What it does: English holly competes with native tree and shrub species. Birds consume the berries and subsequently spread holly seeds.

How to get rid of it: Trees are slow-growing and may be controlled by removing plants before they start producing seed (5-12 years after germination). Cut near the base and dig out roots or treat the stumps chemically to prevent re-sprouting.



Plants that Invade Coastal Sand Dunes

European Beachgrass

Ammophila arenaria (Grass family)

Where you will find it: Coastal sand dunes

Description: Perennial grass, 1 - 4 feet tall. European beachgrass is a coarse, clumped grass. It has stiff, narrow, rolled leaves that turn brown in the fall. Conversely, the native dune grass *Elymus mollis* has broad, flat, blue-green leaves.

What it does: This aggressive grass creates a densely vegetated, steepened fore-dune that prevents natural movement of sand, which then harms native plants relying on an ever-shifting dune structure. At risk in local dunes are two federally endangered plants: the Humboldt Bay wallflower and beach layia.

How to get rid of it: Dig out the roots about three feet deep, and use a rake or mesh screen to thoroughly remove rhizome fragments. Remove new re-sprouts every few weeks from spring through fall. Land managers on the North Coast have used this method successfully to restore and protect native dune plant communities.



Iceplant

Carpobrotus edulis (Fig-Marigold family)

Where you will find it: Sand dunes, sandy roadsides, coastal bluffs, coastal prairies

Description: Perennial groundcover. Iceplant has succulent leaves and bright purple or yellow flowers, with a fig-like fruit. Also called "Hottentot fig" or "highway iceplant," the species has been planted to stabilize sandy areas adjacent to roadways and as a hardy ornamental groundcover.

What it does: Iceplant forms dense mats that smother native plants. Iceplant can reduce soil pH and cause an increase in organic matter that is detrimental to native dune plant species. Iceplant fruits are eaten by rabbits, who then disperse the seed.

How to get rid of it: If you have a dense patch, "roll it up" like a carpet as you sever the roots underneath. Sparser patches need to be dug up. Use a rake to thoroughly remove all root fragments and follow up by removing re-sprouts. If possible, dispose of the material off-site.



Yellow Bush Lupine

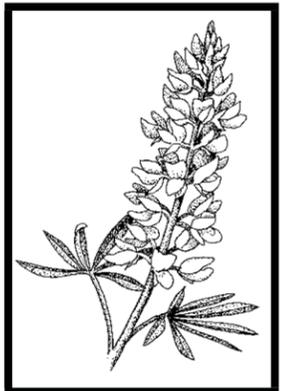
Lupinus arboreus (Legume family)

Where you will find it: Sandy areas, mostly near the coast.

Description: Evergreen shrub, 4 - 6 feet tall. It is easily identified as the shrub in the dunes with many spikes of bright yellow, pea-shaped flowers. Yellow bush lupine is native to the central and southern coastal regions of California, but was introduced in Humboldt County as an ornamental plant and to stabilize dunes along former timber industry railroad lines.

What it does: Yellow bush lupine adds nitrogen to nutrient poor dune soils in which native dune plants are well-adapted. Increased soil fertility then allows non-native plant species to invade, out-competing native species.

How to get rid of it: Before they go to seed, cut mature plants at the base and split the trunk to discourage re-sprouting. Small seedlings can be pulled up. The seedbank lasts for years so you will need to continue to pull seedlings in subsequent years.



Plants that Invade Grasslands, Fields, and Roadsides

Barbed Goatgrass

Aegilops triuncialis (Grass family)

Where you will find it: Dry, disturbed sites, fields, pastures, oak woodlands, roadsides

Description: Winter annual grass with spikes similar to winter wheat; spreading to erect, about 2 feet tall. Spikes break apart at the nodes into hardened joints. Leaves gray-green; collar with stiff hairs.

What it does: Plants have high silica content, creating thatch that suppresses other species; forms monocultures in marginal environments; invades wheat fields, reducing quality and value; joint ends are sharp and can injure livestock.

How to get rid of it: Hand pulling, hoeing, mowing (after flowering/before seeds reach soft boot); heavy grazing during growing season; burning with second year treatment strategy.



Dalmatian Toadflax

Linaria dalmatica ssp. *dalmatica* (Figwort family)

Where you will find it: Open fields, pasture, rangeland, disturbed sites/roadsides, agricultural lands

Description: Herbaceous perennial, 3 feet tall, multi-stemmed (up to ~ 25 stems); leaves bluish green, heart-shaped, waxy, 1/2 to 2 inches long; deep-rooted; two-lipped flowers, yellow, with bearded throat and long spur, similar looking to a snapdragon, 3/4 to 1-1/2 inches long; vigorous seed producer.

What it does: Forms dense colonies from seed and creeping roots; displaces native grasses and other perennial plants; decreases forage for domestic livestock and wildlife.

How to get rid of it: Hand pulling of young seedlings is effective; properly time mowing to prevent going to seed; utilize grazing by goats; eight biological (insect) control agents have been released in the western U.S.; chemical control with selective herbicides.



Fennel

Foeniculum vulgare (Carrot family)

Where you will find it: Widely distributed in disturbed areas, especially moist sites.

Description: Perennial herb, 2 - 10 feet tall. Fennel has upright stems, a stout taproot, feathery leaves with a licorice scent, and flowering stalks with umbrella-like clusters of small yellow flowers. Do not confuse fennel with poison hemlock, which has purple spots on the stem.

What it does: Fennel aggressively competes with native plants for available light, water, and nutrients. It has prolific seed production and a long-lived seed bank.

How to get rid of it: If seeds are present, carefully bag the seed head, cut it off and dispose of it. Dig out individual plants. For large infestations, repeated cutting or mowing can control fennel. Fall burning followed by chemical control in the spring is also effective.



Foxglove

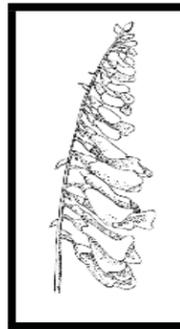
Digitalis purpurea (Figwort family)

Where you will find it: Disturbed sites in full sun to part shade, on well-drained acid soils

Description: Perennial herb, 1 - 5 feet tall. It is hard to miss this beautiful plant, with one-sided stalks of nodding, bell-shaped, pinkish purple to white flowers. It is cultivated both ornamentally and as a source of extract for a medically important heart stimulant.

What it does: This popular garden plant has escaped into the wild where it may grow so densely that it crowds out native plants. It is toxic to humans, pets, and livestock; avoid direct contact with skin.

How to get rid of it: Foxglove reproduces only by seed. Pull it up before it goes to seed. Wear gloves, as it can cause numbness of the hands.



Plants that Invade Grasslands, Fields, and Roadsides

Italian Thistle

Carduus pycnocephalus (Sunflower family)

Where you will find it: Open areas, disturbed sites, pastures, roadside, agricultural fields

Description: Annual, sometimes biennial; to 7 feet tall; erect form, lower leaves mostly 4 -10 lobed, prickly, with pale veins; stem wings to 1/4 inch wide, smooth to slightly wooly, interrupted near flower heads; leaves mostly covered with wooly hairs; cylindrical flower heads, 1/2 inch diameter, pink to purple

What it does: These thistles can tolerate a wide range of soil types, but prefer fertile, well-drained soils, dominating sites and crowding out native species and forage plants. The spines inhibit grazing and discourage livestock and wildlife from entering infested areas.

How to get rid of it: Thistle head weevils have been introduced as a biocontrol agent. Thistles may be manually removed when small. Cutting plants with a sharp tool 2 - 4 inches below ground line can prevent re-sprouting from dormant buds. Mowing when plants are bolting, but before full flower, can greatly reduce seed production. Seeds rarely persist in soil for more than a few years. Thistles compete poorly with healthy, established grasses.



Spotted Knapweed, Diffuse Knapweed, and Meadow Knapweed

Centaurea stoebe ssp. *micranthos*, *C. diffusa*, and *C. debeauxii* (Sunflower family)

 [Call 441-5260 to report new sightings](tel:441-5260)

Where you will find it: Open, disturbed sites, roadside, meadows, agricultural fields

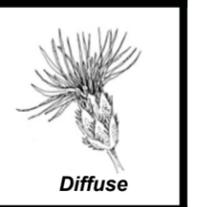
Description: Herbs, 3 - 4 feet tall. Spotted knapweed has divided leaves and pink to purple flowers, with black tips on the bud bracts, and which lack a vertical spine (diagnostic feature). Diffuse knapweed produces many-branched stems with lobed leaves and white to purple flowers; flower bracts have 4 to 5 pairs of horizontal spines and one long vertical spine. Meadow knapweed is bushy, with simple leaves and slightly larger, bright pink to purple flowers with fringed bracts that lack a vertical spine.

What it does: Among the greatest threats to grazing lands and grasslands in the Western U.S., knapweeds severely decrease forage quality for livestock and wildlife.

How to get rid of it: Knapweeds are found in a few isolated locations in Humboldt County. You can help by reporting new infestations. Hand pull small plants, and grub out deep roots.



Spotted



Diffuse

Yellow Star Thistle

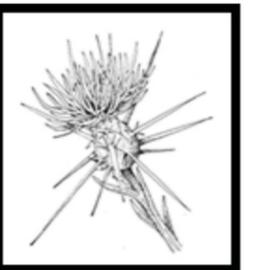
Centaurea solstitialis (Sunflower family)

Where you will find it: Open, disturbed sites, pastures, roadside; prevalent inland on dry soils

Description: Annual herb, 1 - 3 feet tall. Yellow star thistle is a very spiny plant with a deep taproot. Yellow star thistle has deeply-lobed, white-woolly leaves. Solitary yellow flowers are located at the end of the branches and have stiff, lateral inch-long spines.

What it does: Yellow star thistle has devastated many acres of land in interior regions of California, forming impenetrable stands that displace desirable vegetation. The thistle reduces the forage value of rangeland, and it contains toxins that are poisonous to horses, causing chewing disease. Yellow star thistle negatively impacts recreation and degrades wildlife habitat.

How to get rid of it: Yellow star thistle reproduces only by seed, however, seed production is prolific and seeds can persist in the soil up to ten years. It is best to treat new infestations early, when manual pulling is effective. Established populations are problematic to control. A combination of methods is effective, including burning, chemical control, and manual or mechanical removal. Mowing is most effective at the early flower stage, followed again 4 - 6 weeks later to cut regrowth. Several insects have been released for biological control, mostly focused on reducing seed production.



Plants that Invade Grasslands, Fields, and Roadsides

Tansy Ragwort

Senecio jacobaea (Sunflower family)

Where you will find it: Disturbed sites, roadside, grasslands, forest, agricultural fields

Description: Annual, biennial, or perennial to ~ 4 feet tall; erect single or branched (near the top) stems; leaves deeply, pinnately dissected 1 - 2 times; yellow, showy flower heads clustered at the stem tips in a dense, flat-topped to slightly rounded cluster of ~ 20 - 60 heads.

What it does: Contains alkaloids that are toxic to humans and livestock when ingested, causing damage to the liver. Cattle, horses, goats, and young animals are susceptible, while sheep are more tolerant.

How to get rid of it: Populations have been reduced significantly since the introduction of cinnabar moths and tansy flea beetles. Plants can be hand pulled with proper protection. Mowing can enhance survival by stimulating vegetative growth; managing pastures to maintain continuous vegetative cover can decrease survival of tansy seedlings.



Teasel

Dipsacus fullonum (Teasel family)

Where you will find it: Disturbed sites, especially where moist; streambanks

Description: Biennial herb, 4 - 6 feet tall. Teasel resembles but is not a thistle. Teasel has a spiny flower head with tiny purple flowers composed in circular rings. The stems are prickly, with opposite leaves. Teasel is often used in dried flower arrangements.

What it does: Teasel out-competes native plants and reduces the forage value of pastures.

How to get rid of it: Before it sets seed, remove teasel by pulling it up, using gloves to protect your hands from prickles. Alternatively, repeated cutting will exhaust root reserves, eventually killing the plants.



Milk Thistle and Canada Thistle

Silybum marianum and *Cirsium arvense* (Sunflower family)

Where you will find it: Open areas, disturbed sites, roadsides, pastures, agricultural fields

Description: Herbs, 1 - 7 feet tall. Milk thistle is a summer annual or biennial plant that forms a basal rosette of leaves the first year, and produces a flower stalk the second year; stems thick, hollow, ribbed; leaves shiny green with white variegation; pink to purple flowers on long stalks, with bristly bracts. Canada thistle is a multi-stemmed perennial with extensive creeping roots; stems slender, smooth, leafy; leaves shallow lobed, toothed, and prickly; flowers pink to purplish, 0.5 - 1 inch wide, lacking prickles.

What it does: Milk and Canada thistles are serious agricultural pests, lowering the forage value of pasture and rangelands and competing with crops for nutrients and water. Dense thistles can also limit access to recreational areas and invade wildlands.

How to get rid of it: Cultivation can control milk thistle; mowing mature plants before flowers open can help control stands. Burning may actually encourage seed germination and establishment. Canada thistle is especially problematic because it can reproduce from tiny root fragments. For this reason, cultivation should be minimized in dense infestations. Repeated mowing during the growing season can drain the plants' reserves and eventually kill the plants. Three insects have been released as biological control, but with limited control. Considerable information and published papers exist on chemical control of Canada thistle.



Milk Thistle



Canada Thistle

Plants that Invade Grasslands, Fields, and Roadsides

Gorse



[Call 441-5260 to report new sightings](tel:441-5260)

Ulex europaeus (Legume family)

Where you will find it: Disturbed sites, sand dunes, gravel bars, pastures, logged areas

Description: Prickly, evergreen shrub, 6 - 10 feet tall. Similar to Scotch broom, gorse has yellow pea-shaped flowers. Unlike broom species, gorse has linear leaves that develop into long, sharp spines. Forms impenetrable thickets.

What it does: Gorse aggressively displaces native plants, acidifies soils, and creates a fire hazard. While relatively uncommon in Humboldt County, it is a major pest in neighboring counties.

How to get rid of it: Like Scotch broom, this plant is best removed by its roots with a tool like a Weed Wrench™, or it will re-sprout. Remove it before it goes to seed, as the seed bank can persist for many decades. Burning followed by grazing goats for 4 - 5 years has proven to be effective. Chemical treatment can be applied to fresh cut stumps or as a foliar treatment.



Himalayan Blackberry

Rubus armeniacus (Rose family)

Where you will find it: Widely distributed in disturbed sites, roadsides, fences, and streambanks

Description: Evergreen, sprawling shrub, forming dense mounds up to 10 feet high. It has stout, angular, sometimes squarish-ribbed, arching canes with broad-based, curved prickles; may have 3 but more typically 5 leaflets, which are white on the underside; and produces large, oblong, black berries. In contrast, native blackberry has smaller, round canes with numerous, finer, prickles; three leaflets, green on both sides; smaller, round to oblong berries.

What it does: Despite its tasty berries, Himalayan blackberry poses a threat by creating dense thickets that shade out native plants and reduce the forage value of pastures.

How to get rid of it: Grub out the roots. Himalayan blackberry will re-sprout from any remaining roots, and it will also regenerate from seed, so infested sites need persistent treatment. Repeated mowing can be an effective control method. Grazing by goats has been used with some success. A fungal rust was discovered in Oregon in 2005 that causes significant injury to Himalayan blackberry, and has spread into California.



Jubata Grass and Pampas Grass

Cortaderia jubata and *C. selloana* (Grass family)

Where you will find it: Disturbed sites near the coast, roadside, freshly-harvested forest lands, coastal dunes

Description: Perennial grass, 6 - 15 feet tall. Jubata grass is often confused with and called Pampas grass. Jubata grass has flowering stems twice as long as the leaves with pink to violet plumes. Pampas grass has stems about the same length as the leaves, with light violet to white plumes. Both species produce flat leaves, folded, with sharply serrated margins, and shallow, fleshy, roots.

What it does: All jubata grass are female plants, however, each plant can produce prolific viable seed without pollination, making this species highly invasive. True Pampas grass needs to have both male and female plants present to successfully reproduce. Plants can completely smother smaller, native annuals and perennials.

How to get rid of it: Remove and place any seed plumes in a sealed plastic bag for disposal. Stems can be chopped down with a Pulaski or an axe, while the root ball must be dug out using a combination of chopping and digging, or you can cover the root ball with black plastic until it dies. Seeds do not persist long in the soil. Burning is not very effective.



Jubata grass

Plants that Invade Grasslands, Fields, and Roadsides

Poison Hemlock

Conium maculatum (Carrot family)

NOTE: ALL PARTS OF THIS PLANT ARE HIGHLY POISONOUS AND FATAL IF INGESTED

Where you will find it: Disturbed sites, especially where moist or shady; streambanks

Description: Biennial herb, 2 - 10 feet tall. In the carrot family, poison hemlock has umbrella-shaped clusters of small white flowers. Purple blotches on the stem are a diagnostic feature.

What it does: Poison hemlock crowds out native plants. It is fatally toxic to humans, pets, livestock, and wildlife. This is the plant that was reputedly used to poison Socrates.

How to get rid of it: Be extremely careful when weeding out this plant as it can poison humans via oral contact with a small amount of seed, leaves, or roots. Additionally, direct contact with the skin can cause dermatitis. Using gloves, pull up plants before they go to seed. Repeated mowing close to the ground will also work.



Scotch Broom and French Broom

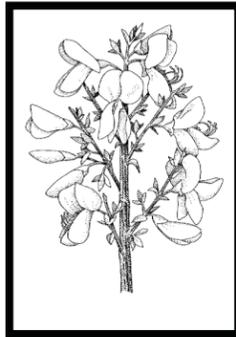
Cytisus scoparius and *Genista monspessulana* (Pea family)

Where you will find it: Grasslands, roadsides, streambanks, logged forests, acidic soils

Description: Evergreen shrubs, 6 - 10 feet tall. Brooms can be identified by their yellow pea-shaped flowers, small leaves, and spineless stems. Scotch broom can have yellow or yellow-red flowers, 5-ribbed stems, and has very small or no leaves. French broom has small but distinct, oval-shaped leaves and 9 - 11 ribbed stems. A third broom, Spanish broom (*Spartium junceum*), is present but less common in Humboldt County. It has slender, smooth stems with linear leaves that are deciduous.

What it does: Invasive brooms aggressively compete with native plants for available light, space, and water. Brooms invade grasslands, roadsides, and forest openings, and also increase the risk of wildland fires.

How to get rid of it: Use a Weed Wrench™ or other tool to remove large plants when soils are damp in winter and spring. Cut down established plants and dig out their roots or they will re-sprout. Continue to treat invaded areas because new plants will grow from the seed bank, which can persist for decades. Subsequent, one-year-old seedlings are often easily pulled out by hand.



Shiny Geranium and Stinky Bob

Geranium lucidum and *Geranium robertianum* (Geranium family)

Where you will find it: Roadside, grasslands, woodlands understory, urban areas

Descriptions: Shiny Geranium is a low-growing annual forb; leaves ~ 1.5 inches wide, shiny, waxy, round to kidney-shaped with 5 - 7 lobes; stems often reddish, up to ~ 20 inches tall; small, pink, 5-petaled flowers; plants are very conspicuous in senescence, with leaves turning to a brilliant reddish-yellow color. Stinky Bob is annual/biennial; triangular, pinnately lobed, compound leaves, purple in senescence, pungent; prostrate or grows upright to about 24 inches tall; flowers similar to shiny geranium.

What it does: Threat to native understory habitat. High seed production and fall emergence enables the plant to spread rapidly, dominate, and persist at a site, becoming a dense cover before later-emerging native herbaceous plants have a chance to grow. Seeds are forcefully ejected, increasing the spread.

How to get rid of it: Hand pulling can provide control, but treating every plant is necessary to reduce future populations. Regardless of control method used, all plants must be killed before or when flowers first bloom, and multiple treatments are required per year. There are multiple generations per year. Plants are easily controlled chemically at low use rates.



Plants that Invade Grasslands, Fields, and Roadsides

Spanish Heath

Erica lusitanica (Heath family)

Where you will find it: Disturbed open sites near the coast, especially on sandy soils; roadsides

Description: Evergreen, erect shrub, 3 - 8 feet tall. This shrub, erroneously called "heather," is popular in floral bouquets. It has beautiful, tiny, white, bell-shaped flowers and soft, needle-like, bright lime-green foliage.

What it does: Spanish heath alters soil pH, making it difficult for native plants to survive. It can totally dominate the shrub layer, forming dense thickets with virtually no understory. A single plant may produce more than 100,000 seeds per year.

How to get rid of it: Younger plants may be easily hand pulled, or use a weed puller. For large, established plants, chop down the shrub and grub out the roots, as they will re-sprout. Re-generation from the seed bank will also require follow-up treatment.



Spurge (Leafy and Oblong)

Euphorbia esula and *E. oblongata* (Spurge family)

Where you will find it: Waste areas, disturbed sites, roadside, fields, pastures, rangelands

Description: Erect perennials to ~ 3 feet tall, with milky white sap and smooth, elliptical to oblong leaves. Leafy spurge forms an extensive system of creeping roots; Oblong spurge forms a vertical tap root, but can bud off new plants near the surface. Spurges form umbel-like flower clusters in summer, with yellow-green bracts, which produce 3-chambered seed capsules capable of projecting seed many feet from the parent plant.

What it does: Spurges form dense patches that displace desirable vegetation. The milky sap is toxic and can irritate eyes, skin, and digestive tracts of humans and animals.

How to get rid of it: Hand pulling, grubbing, and/or hoeing before seed set works for small patches, but must be repeated multiple times per year. Goats have been used successfully in control programs. 15 insect species have been released in the U.S. for control of leafy spurge. Chemical control may work better on expansive infestations.



Stinkwort



[Call 441-5260 to report new sightings](tel:441-5260)

Dittrichia graveolens (Sunflower family)

Where you will find it: Roadside, wasteland, gravel areas, levees, fields, grasslands, vernal pools

Description: An erect, fall-flowering annual up to 3 feet tall, with sticky, glandular, hairy, aromatic leaves; linear to lance shaped leaves, 1/2 to 1 inch long; small, yellow flowers ~ 1/4 inch diameter.

What it does: Stinkwort is expanding rapidly in California. It causes allergic contact dermatitis in humans, and is implicated in livestock deaths by enteritis (barbs on seeds puncture the small intestine); outcompetes desirable vegetation and reduces available grazing area.

How to get rid of it: Hand pulling (with proper protective clothing) can provide control, along with hoeing prior to flowering. Mowing provides partial control, but would require multiple treatments to clip re-growing lower limbs; mowers can act as a vector for seeds. Grazing is not expected to be a viable treatment. No biological controls presently known for this species. Chemical treatment requires good spray adjuvant to overcome the oily, hairy leaf surface.

