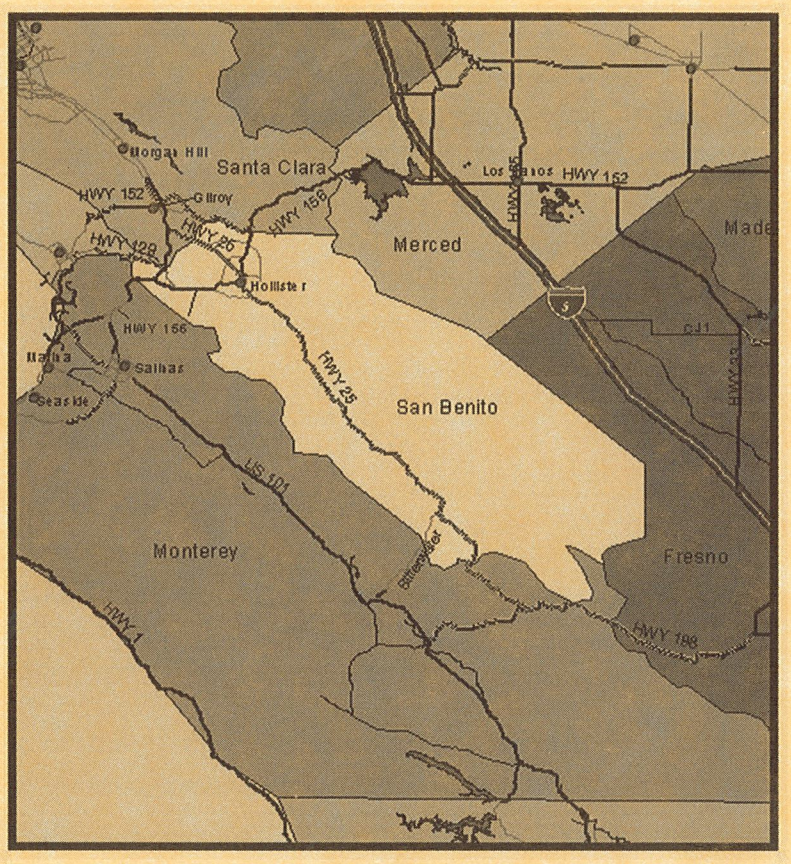
Selected Invasive Weeds Of San Benito County

A Field Identification Guide



Noxious weed means any species of plant that is, or liable to be, troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate, which the Secretary of the California Department of Food and Agriculture, by regulation, designates to be a noxious weed.

- definition from the California Food and Agriculture Code

How to Use This Identification Handbook

1. First, carry this handbook with you whenever you are out and about in San Benito County. Put it in your glove compartment, pack, or lunch box so that it is easily accessible at all times.

2. Refer to it when you encounter a plant that you may suspect is an invasive plant.

3. Use the pictures and descriptions to identify the invasive plant.

4. Fill out the survey form in the back of the book each time you identify an invasive plant in a new location.

5. On the reverse side of the survey form, draw a simple map to locate the site where the invasive plant is encountered. Put as much detail in the drawing as you can. Ask yourself when you re finished, Is the map drawn well enough that someone else unfamiliar with the area could find the site and these plants?

6. Submit the completed form and map to: San Benito County Weed Management Area, c/o Agricultural Commissioner s Office, 3224 Southside Road, Hollister 95023.

Introduction

Many names including exotics, aliens and noxious weeds refer to non-native invasive plants. The plant species presented in this booklet are non-native plants that aggressively spread throughout San Benito County and often displace our native plants and animals. These invasive plants are often detrimental, or destructive to agriculture, and silviculture and are difficult to control or eradicate. Most of us are familiar with many and the purpose of this booklet is to help identify, locate and control those that are currently considered most threatening in beautiful San Benito County.

Thank you for joining in the effort to protect our natural communities, rangelands and agricultural areas by utilizing this booklet and the survey forms provided to report non-native plant occurrences.

Many weeds can be controlled by a combination of mechanical, cultural or chemical methods. For the most current control information consult with the local University of California Co-operative Extension Office, a pest control advisor or the County Agricultural Commissioner's Office.

Remember, herbicides are pesticides; always read and follow all use instructions and safety requirements that appear on the label. It is a violation of State law to use a pesticide in conflict of it's labeling. Store all containers in a locked storage area and any empty containers must be disposed of properly.

Keen observation at early infestation levels and reports of any and all occurrences of these weeds will help so that treatment programs to eradicate or control these infestations may be implemented and monitored.

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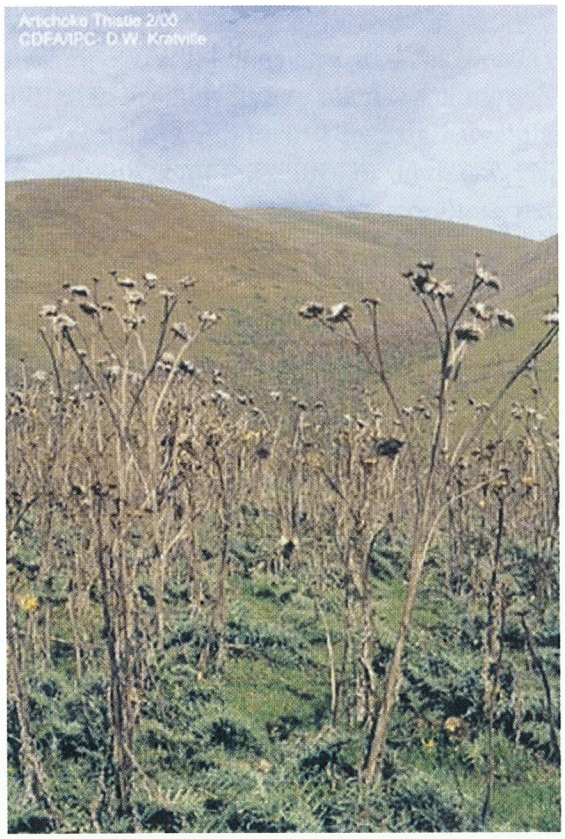

Artichoke Thistle
Cynara cardunculus
Asteraceae: Sunflower Family

Large spiny **perennial** up to 8 feet tall. Considered by some to be the same species as globe artichoke and the two readily hybridize. **Stems** are thick, erect, branching near the top, ribbed. **First leaves** are 1 to 8 inches long, tapered to a long stalk, weakly toothed, tipped with a very short, yellowish spine and covered with short white wooly hairs. **Basal leaves** up to 6 feet long, 1-2 pinnately lobed or divided, tipped with a stiff, yellowish to pale orange spine. **Flower heads** are 1-6 inches in diameter, consisting of numerous bluish or purple flowers. Phyllaries are ovate, overlapping in several series and tapered to a stout point. Reproduces by seeds that can live up to 5 years, and root fragments.

Native to the Mediterranean. Primarily found in rangeland.

There are three known infestations of Artichoke Thistle in the County which are currently under eradication.

Early detection of new infestations is critical for control and they should be reported to the Agricultural Commissioner.

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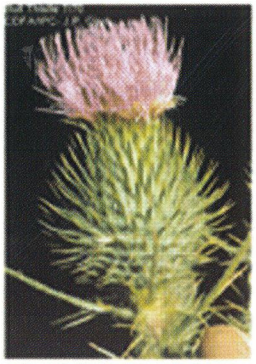
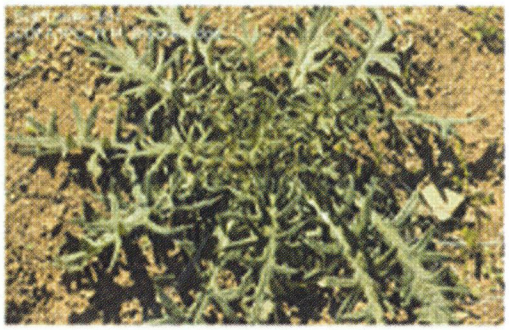




Bull Thistle
Cirsium vulgare
Asteraceae: Sunflower Family

Biennial up to 6 feet tall with a short fleshy taproot. **Stems** multiple branching and widely spreading with conspicuous prickly-wings. **Leaves** sparsely and prickly hairy above, cottony below with spines on margins. Basal leaves 4-16 inches long with margins deeply coarse-lobed and toothed, with main prickles. Stem leaves smaller, more deeply lobed and spinier than basal leaves. Rosette forms the first year and stems and flower heads form the second year. **Flower heads** are 1-2 inches in diameter, solitary to loosely clustered. Purplish flowers. **Phyllaries** narrow, spreading and spine tipped. Flowers June through October. **Seeds** mostly germinate the first year or die but buried seeds may survive 3 or more years.

Native to Eurasia. Found along roadsides, in pastures and disturbed areas. An aggressive weed that forms dense patches. Does best on deep, well drained, fertile soil.

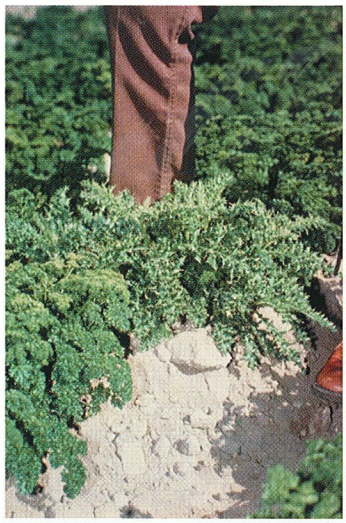
Found throughout the county.

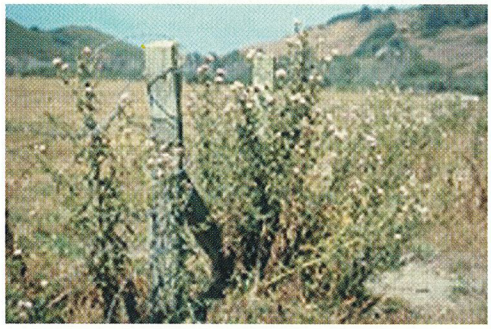
Control by mowing or hand pulling just before flowering and remove stems. May resprout if mowed too early. Can be controlled with chemicals. Follow-up control is necessary to deplete soil seedbank.

NOTES:

Johnson (basal lvs and leg)

Barbe (plants in field)





Canada Thistle
Cirsium arvense
Asteraceae: Sunflower Family

Perennial weed with separate male and female plants 1 to 4 feet tall forming dense patches from a deep spreading root system. **Stems** are slender, smooth, and leafy. **Rosette leaves** few or lacking. **Leaves** 2-8 inches long; oblong to lance shaped with margins smooth to shallowly lobed with short prickles. Upper leaf surface covered with stiff hairs, lower surface covered with cobwebby hairs. **Flowers** are usually light lavender to purple,less commonly white, and usually occur in clusters. Outer phyllaries ovate, close-laying with spreading tips. Plants reproduce from seeds, a creeping root system, and root cuttings. Seedlings start forming a perennial rootstock when three weeks old. Most seeds germinate within three years but buried seeds can survive 10 years or more.

Native to Eurasia. Grows in cropland, pastures, and rangeland.

Found in north county, San Juan Valley and Hollister areas.

Frequent mowing of new shoot to deplete root reserves can control infestations. Can be controlled with chemicals. Cultivation is not recommended for control as this can spread root fragments.

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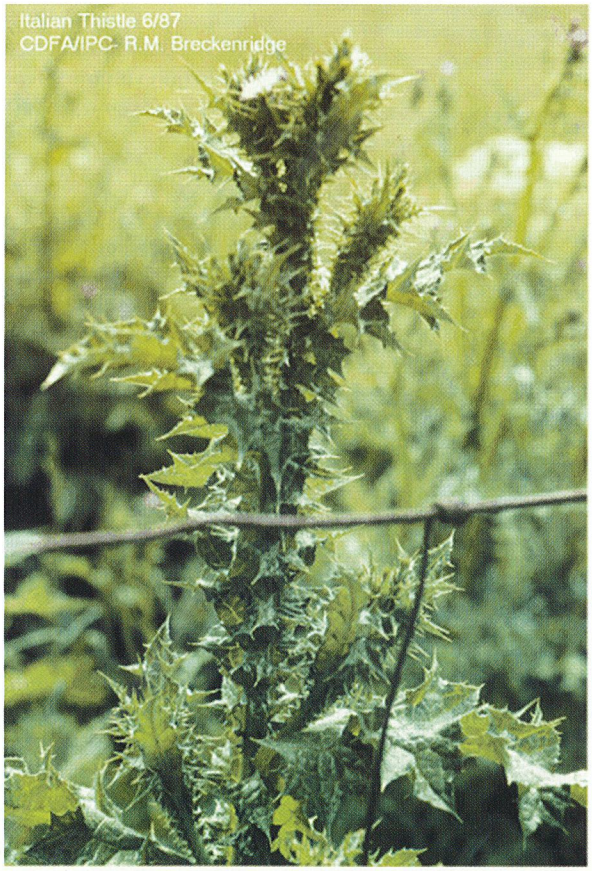

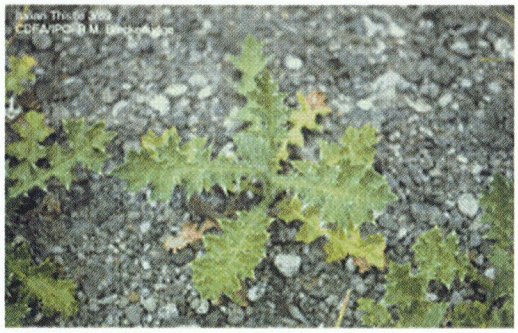

Italian Thistle
Carduus pycnocephalus
Asteraceae: Sunflower Family

Winter annual, 8 in. to 6.6 ft tall, glabrous to slightly woolly, narrowly spine-winged. **Leaves** basal 4-6 in., 4-10 lobed, cauline. **Flowers** 2-5 heads per cluster, sessil or short peduncled, 0.5-0.8 in. diameter, pink to purple. **Phyllaries** loosely tomentose, tips spiny. **Seeds** 0.3 in., mucilaginous, veins 20, pappus present, 0.4-0.6 in.; two forms produced; golden to brown and silver.

Native to the Mediterranean, southern Europe, and North Africa to Pakistan. Introduced into the U.S. around 1912, spread by wind, vehicles, and animals, a single plant can produce up to 20,000 seeds per season!

Occurs throughout California coastal ranges, including San Benito County, below 3,000 ft. in meadows, pastures, ranges, on roadsides, and in disturbed wildland areas.

Manual /mechanical methods such as hand pulling are effective for control. Plants should be removed well before seed set.

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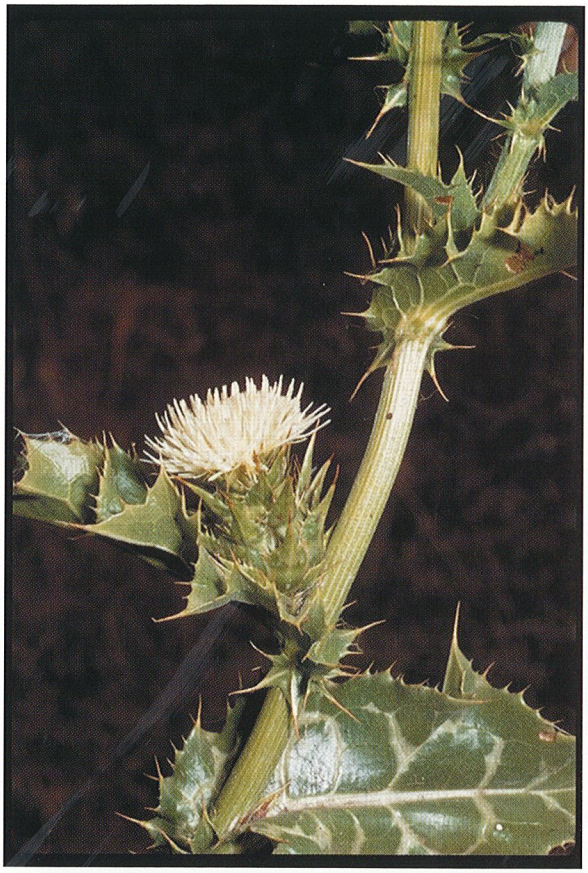

Milkthistle
Silybum marianum (L.) Gaertn.
Asteraceae: Sunflower family

Annual to biennial. **Stem** generally branching, stout and ridged**,** up to 6 feet tall.
Leaves alternate with deeply cut, spiny tip margins, with white marbling along the veins. **Flowers** approximately 2 inches in diameter, solitary at end of branches. Ray flowers reddish purple. **Phyllaries** leathery and spine tipped.

Native to Europe. This weed invades cultivated fields, waste areas, pastures and roadsides. Seeds are sometimes used as a coffee substitute.

Milkthistle is common and found throughout San Benito County

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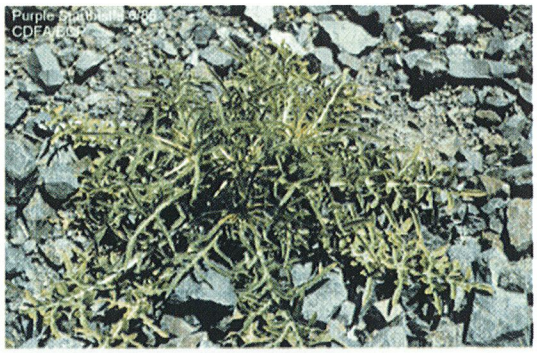

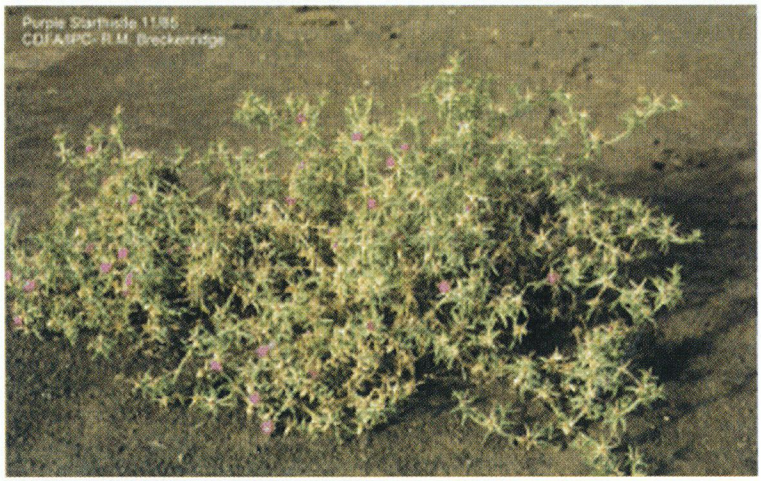

Purple Starthistle
Centaurea calcitrapa
Asteraceae: Sunflower Family

Noxious **bushy** weeds with spiny phyllaries. Annual to perennial, to 3 ft. tall. Plants exist as basal rosettes until erect. Highly branched flowering stems (25-40 flowers per head) are produced late spring/summer. **Flowers** are purple. **Leaves** resin-dotted. Upper leaves mostly pinnate-divided. New leaves densely covered with gray hairs. **Rosettes** develop straw-colored spines at the centers and have stout taproots. **Seeds** disperse with the seed head as a unit. Most seed germinates the first year, but buried seed can remain dormant for about 3 years.

Native to southern Europe. Found in fields, roadsides, disturbed open sites, grasslands, overgrazed rangelands, and logged areas. Plants seldom persist in shaded places and colonize most soil types that have been disturbed.

Currently found in the Northwest portion of the County.

Rosettes are usually too low to be affected by mowing. Mowing mature flower stems disperses seed and can stimulate re-growth of stems. Hand pulling 2-4 times per year or severing plants at least 2 inches below crowns can control small infestations.

NOTES:

Scotch Thistle
Onopordum acanthium
Asteraceae: Sunflower Family

Biennial up to 10 feet tall. **Stems** are erect and branching. **Leaves** are coarse, lobed with spiny margins, and covered with fine, white, wooly hairs on both surfaces. The leaves form conspicuous spiny leaf wings that extend down the stem. **Rosettes** form the first year with leaves up to 2 feet long. Stems and flower heads form the second year. **Flower heads** are solitary or sometime clustered, numerous and 1-2 inches in diameter. Flowers are violet to reddish purple**. Phyllaries** are spine tipped and covered with short hairs. Flowers from June-September. Seeds can remain viable in the soil at least 7 years and possibly 20 years or more.

Native to Eurasia. Typically found in rangeland.

There are two infestations of Scotch Thistle known in San Benito County, which are currently under eradication.

Early detection of new infestations is critical for control and they should be reported to the Agricultural Commissioner.

NOTES:

Tocalote, Napa Thistle
Centaurea melitensis
Asteraceae: Sunflower Family

Annual, 1 to 3 feet. Grows from taproot, erect with rigid branching. **Stems** rigid, slightly winged, and covered with cottony pubescence. Basal **leaves** entire to shallowly lobed (as are leaves of seedlings); upper leaves entire and rounded. **Flowers** yellow, terminal, armed with straw-colored thorns. Flower April to July. **Seeds** typically light brown with tan stripes, all seeds with a tuft of white bristles, about 1/8 inch long or shorter.

Native to southern Europe. Very similar to yellow starthistle, but with a few notable exceptions. The leaves in the basal rosettes are not as deeply notched, the flowering stalks are less winged, the plant flowers much earlier in the season, and the spines are shorter.

Although it invades similar habitats to yellow starthistle, it can also be found in relatively undisturbed sites, making control problematic. This plant is also toxic to horses as it causes "chewing disease". It is widespread in San Benito County, though not as noticeable as yellow starthistle. Often these two species occur in the same areas, blooming at different times.

A combination of physical, biological and chemical controls can be used to prevent spread of this species and reduce the population size in some areas. On smaller populations, mowing, before bolting, has been shown to be an effective physical control method. Transline, a narrow focus herbicide that target thistles, has been shown to be effective in areas of larger infestations. Follow up treatments are necessary to prevent recolonization and adapted resistance to the herbicides.

NOTES:

Ordano (flower head)

CDFA (roadside plants)

CDFA (plant parts0

Yellow Starthistle
Centaurea solstitialis
Asteraceae: Sunflower Family

Annual, 1 to 3 feet. Grows from taproot, erect with rigid branching. **Stems** rigid, winged, and covered with cottony pubescence. Basal **leaves** deeply lobed (as are leaves of seedlings); upper leaves entire and sharply pointed. **Flowers** yellow, terminal, armed with straw-colored thorns. Flower May to October. Outer **seeds** dark brown without bristles; inner seed mottled light brown with tuft of white bristles, about 1/8 inch long.

Native to southern Europe. Invades various soil types on waste areas, roadsides, pastures, and dry rangelands. Toxic to horses as it causes "chewing disease".

Starthistle in San Benito County, though prevalent, does not occupy all potential habitat at this time.

A combination of physical, biological and chemical controls can be used to prevent spread of this species and reduce the population size in some areas. On smaller populations, mowing, before bolting, has been shown to be an effective physical control method. Biological control agents have been approved for use in California and have been released in San Benito County on a trial basis. Transline, a narrow focus herbicide that target thistles, has been shown to be effective in areas of larger infestations. Follow-up treatments are necessary to prevent recolonization and adapted resistance to the herbicides. Grazing at early stages can be an effective method when combined with other treatment methods and follow-up procedures. With concentrated control efforts the spread of this plant can be stopped and this plant can be controlled in most situations.

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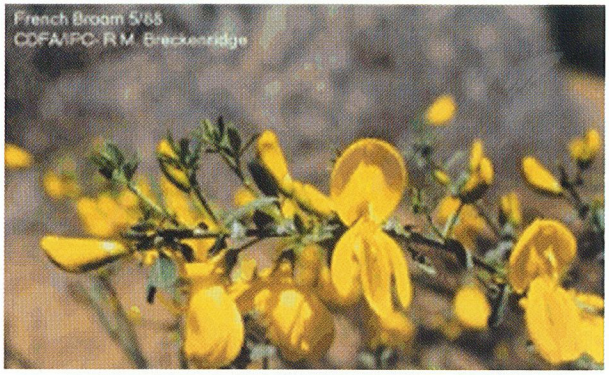

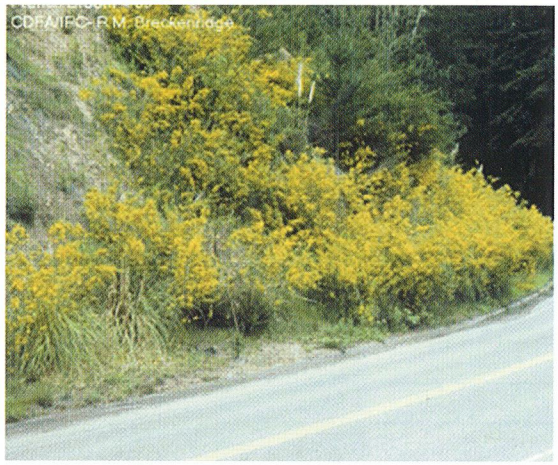

French Broom
Genista monspessulana
Fabaceae: Pea Family

An upright, **evergreen shrub** up to 10 feet tall. **Leaves** alternate with leaflets arranged in groups of three. **Stems** covered with silvery, silky hair. **Flowers** less than half-inch, yellow, pea-like, and clustered in groups of four to ten. **Fruits** are pods covered with hairs. French broom is toxic to livestock. Looks similar to Scotch broom, which is also an invasive.

Native to the Mediterranean. Found in varied soils including soils with high pH and soil with poor nutrients. Inhabits disturbed places including road cuts, forest clear cuts, and riverbanks, as well as grasslands and open canopy forests.

Found in north western San Benito County and contiguous coastal counties.

Hand removal or mechanical methods work well for controlling small infestations. Fire and chemical techniques are effective for treating large infestations. Follow-up is critical for eradication.

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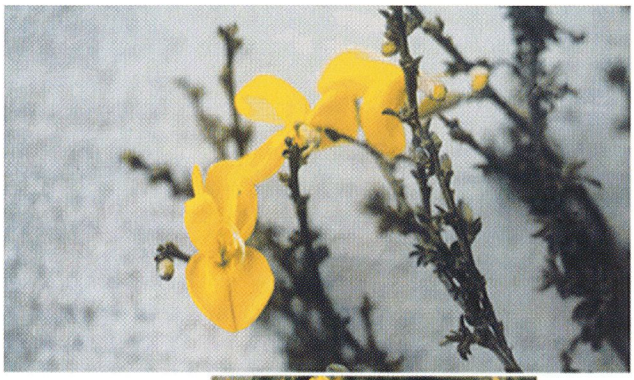

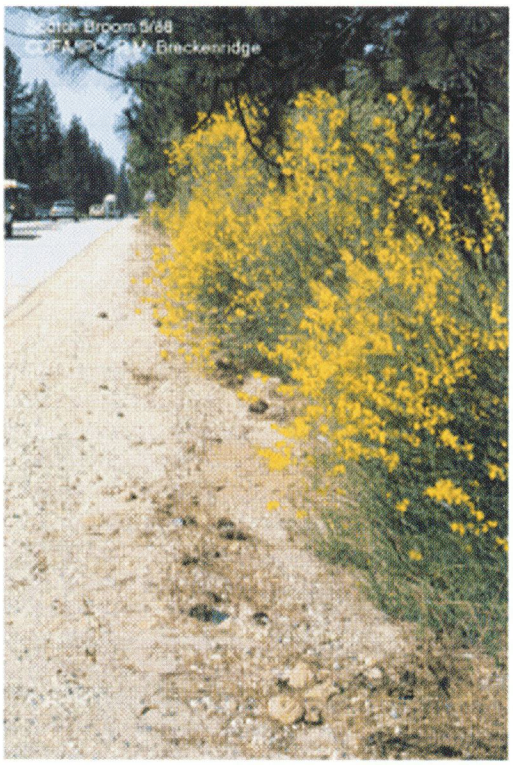

Scotch Broom
Cytisus scoparius
Fabaceae: Pea Family

An upright, **evergreen shrub** up to 10 feet tall. **Leaves** alternate with leaflets arranged in-groups of three. **Stems** five, angled, green and hairy when young, later glabrous. **Flowers** 1-2 clustered in leaf axis, pea-like, without hairs. Corolla golden yellow, banner 0.6 – 0.7 inches, may curl backwards. **Fruits** are flat pods with hairs present along seams only. Looks similar to French broom (*Genista monspessulana*) which has hairs all over fruits, stems that are not ridged or green, and flowers in clusters of 8 – 10. Both Scotch and French broom are toxic to livestock.

Native to Europe and North Africa. Found in soils with pH less than 6.5, low fertility, and is rare on limestone. Inhabits disturbed places including road cuts, forest clear cuts, and riverbanks, as well as grasslands and open canopy forests.

May occur in northwestern San Benito County and contiguous coastal counties.

Hand removal or mechanical methods work well for controlling small infestations. Adding surfactant improves effectiveness. An integrative approach using mechanical, fire, and chemical techniques is most effective for treating large infestations. Follow-up is critical for eradication.

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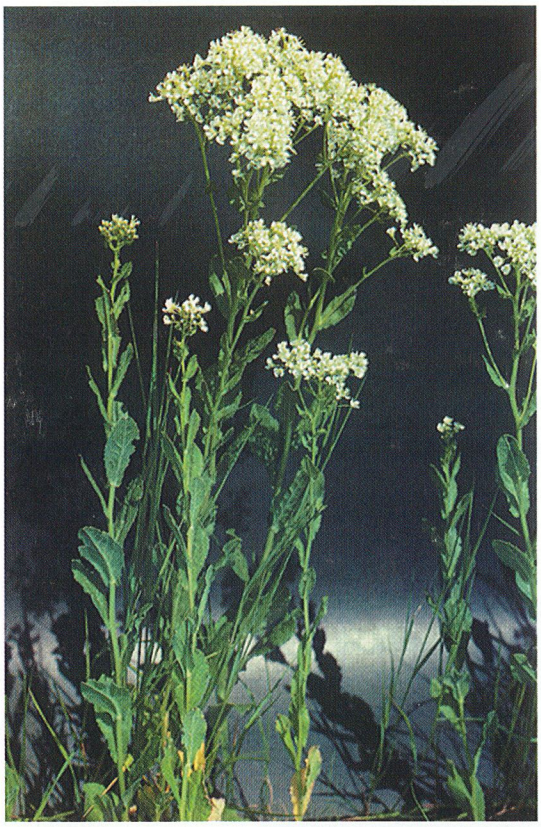
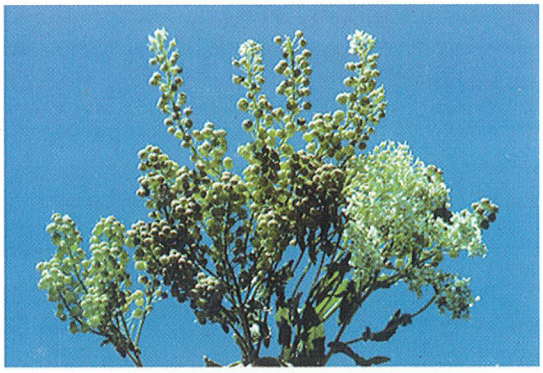




Hoary Cress – Whitetop
Cardaria draba
Brassicaceae: Mustard Family

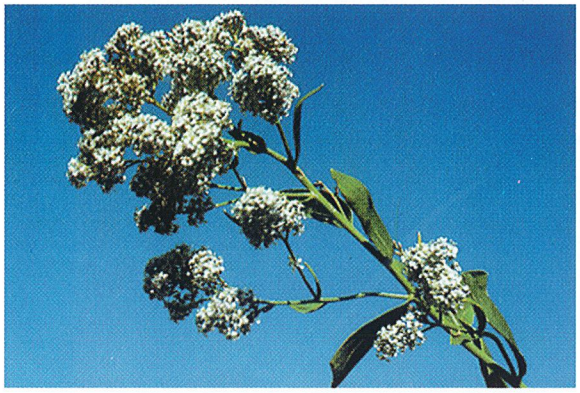
Deep rooted **perennial** to 3 feet. **Leaves** blue-green, lance-shaped. **Lower leaves** stalked, while **upper leaves** with two lobes clasping the stem. Many clusters of white **flowers** give a white, flat-topped appearance. Flower with 4 petals. Flowers April to July. **Seed** capsules heart-shaped, containing 2 reddish-brown seeds separated by a narrow, papery partition. Reproduces from both root segments and seed.

Native to Europe. Commonly grows in disturbed sites, saline soils, and along riverbanks and other waterways.

Hoary Cress, also locally known as Hellweed, occurs throughout San Benito County.

Mechanical removal is strongly discouraged as all small, broken root segments left behind will form a new plant that will produce many more plants. Chemical control and proper cultivation techniques are effective.

NOTES:



Perennial Pepperweed or Tall White Top
Lepidium latifolium L.
Brassicaceae: Mustard family

Perennial, multi-stemmed 1 to 8 feet. **Leaves** lanceolate, bright green to gray-green, waxy and smooth to toothed margin. Basal leaves larger than upper leaves. **Flowers** are white, tiny and develop in dense clusters near the ends of branches. **Fruit** a two-seeded capsule. Reddish-brown seeds round, flat, slightly hairy, and about 1/16 inch long. Flowers June to August.

Native to Eurasia. Grows in waste areas, wet areas, ditches, roadsides, cropland, along waterways, and dry habitats such as road cuts and fills. Robust, deep-seated spreading roots and numerous seeds make this weed very difficult to control. Outcompetes native vegetation and crops, forming its own monoculture.

Recently located in a few places within San Benito County. Watch for this species diligently!

Reproduces by seed or vegetatively and is an aggressive invader. Attempts at mechanical removal spreads the plant and increases its numbers.

NOTES:

Giant Reed
Arundo donax
Poaceae: Grass Family

One of the largest herbaceous **perennial** grasses, 12 to 25 feet in height. **Stems** 1/4 to 2 inches thick. A warm season grass that produces rhizomes and deep fibrous roots to support its tall hollow stems. **Leaves** blue-green about 1 inch wide and 12 inches long. **Flowering** occurs in late fall. The plume-like flowers reach a length of 12 to 24 inches.

Native to the Mediterranean region of Europe. It can grow in a wide range of conditions, from moist well-drained soils to those with a water table at or near the surface. It is found along roadsides, in ditches, and along banks of streams and rivers.

Sparsely found in riparian and watershed drainage's throughout San Benito County.

Difficult to control, it can grow from rhizome fragments scattered during disturbance of the topsoil. This limits mechanical control to mowing. Mowing must be repeated several times to ensure depletion of the rootstock and is best in conjuncture with herbicides. Glyphosate herbicides applied to leaves or cut stems have proven effective.

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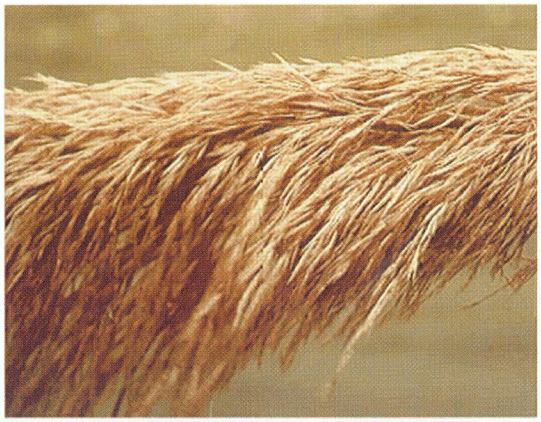


Jubata Grass
Cortaderia jubata
Poaceae: Grass Family

Perennial grass, up to 23 feet tall. **Leaf** blades 3-5 ft long, 0.8-4 in. wide, bright to deep green arising from a tufted base or tussock; sheath densely hairy. **Flower** Stalk dense panicle, 1-3 ft long, deep violet when immature, pinkish turning cream-white or tawny at maturity. **Spikelets** numerous, all female, 0.6 in. long, 3-5 florets in each.

Native to South America. Grows aggressively in disturbed areas including ditch banks, road cuts, cliffs, burned, and cut-over areas. Threatens California's native coastal ecosystems by crowding out native plants.

Found in San Benito and surrounding counties.

Successful removal has been achieved by pulling and hand grubbing seedlings. Mechanical removal of large plants as well as spot treatments with a post-emergence application of glyphosate at about 2 percent solution is effective. Cutting and removing the flower stalk prior to seed maturation is important to prevent seed dispersal. Prescribed burning is not recommended for long-term control because it encourages regeneration.

NOTES:

Medusahead
Taeniatherum caput-medusae
Poaceae: Grass Family

Aggressive **winter annual** 1/2 to 2 feet. **Leaf** blades generally 1/8 inch wide or less, rolled. **Flowers** long awned spike nearly as wide as long. Mature awns or beards twisted, 1 to 4 inches long, stiff, finely barbed. Sometimes confused with foxtail or squirrel-tail, however spike head does not break apart as **seeds** mature. Individual awned-florets fall away, leaving a bristly head of awn-like glumes that will persist over winter.

Medusahead is native to Eurasia. Appears most commonly on high shrink-swell clay soils. Infested rangelands have suffered up to 75% reductions in grazing capacity.

Infested areas have been found throughout San Benito County.

Can be controlled by burning and cultivation, introduction of good forage plants through program seeding. Nitrogen fertilization can reduce Medusa-head by increasing competition from other grasses and Forbs. Heavy grazing of infested areas during the spring green stage, animals must be removed after the seed head forms to limit seed dispersal. Chemical control – application in the fall has been successful.

NOTES:

Pampas Grass
Cortaderia selloana
Poaceae: Grass Family

Perennial grass. Leaf blades to 6 ft long, 1-3 in. wide, bluish green. **Flower** dense panicle, 1-4 ft long, stiff, light violet to silvery white when immature, white at maturity. Easily confused with jubata grass (*C. jubata*).

Native to South America. Introduced for horticultural use, and is commonly used as an ornamental throughout California. Although less aggressive than jubata grass, pampas grass reproduces both by seed and vegetatively and is capable of surviving for up to 15 years.

Pampas grass has escaped cultivation and has spread along sandy, moist ditch banks. Know to occur in NW San Benito County and surrounding counties.

Successful removal has been achieved by pulling and hand grubbing seedlings. Mechanical removal of large plants as well as spot treatment with a post-emergence application of glyphosate has been effective. Detached plants remaining on soil surface may resprout under moist conditions. Cutting and removing the flower stalk prior to seed maturation is important to prevent seed dispersal. Prescribed burning is not recommended for long-term control because it encourages regeneration.

NOTES:

Clementson(single bunch)

Barbe (many plants)

Barbe (seed in hand)

Punagrass
Achnatherum brachychaetum
Poaceae: Grass Family

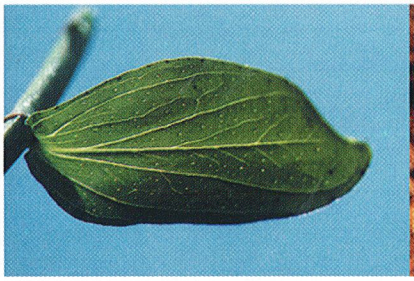
Densely tufted **perennial** with shallow fibrous **roots**. Plant can reach 3 feet in height. The basal foliage is persistent year-round, the flowering stalks appearing in the spring. **Leaf** blades are 0.039-0.078 in. wide and 15-24 in. long, flat and slightly rolled upward. **Sheaths** are open and glabrous, but with ciliate hairs along the upper margin. Lugules are membranous. **Flowering** heads are pyramidal in outline, the **branches** ascending but barely exceeding the basal leaves. In addition to the regular flowers, some florets are self-fertilizing. These **florets** occur in the basal leaf sheaths that remain in the plant until disturbed or until the culms fall off the following season.

Originally from Argentina. Foliage is tough and unpalatable to livestock. This plant is associated with alfalfa fields and adjacent drainage ditches, dairies and horse pastures.

Not yet reported in San Benito County. There is one population known from Monterey County, which is currently being controlled.

Early detection is critical, and notification of county Agricultural Commissioner is requested.

NOTES:



Klamathweed - St. Johnswort
Hypericum perforatum
Hypericaceae: St. Johnswort Family

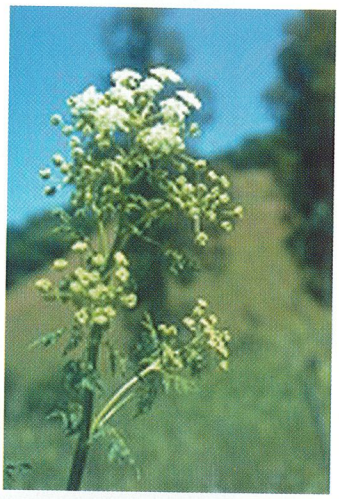
Perennial 1 to 3 feet with erect, two ridged stems and numerous rust-colored branches. **Leaves** opposite, oblong, entire, covered with tiny transparent dots. **Flowers** numerous, bright yellow, with five separate petals that twist after flowering. Flowers June to September. **Petals** about 1/2 inch long with occasional minute black dots around the edges. Stamens numerous, arranged in three groups.

Native to Europe. Usually found in sandy or gravelly soils and along roadsides. Contains a toxic substance when consumed by animals that causes weight loss and when exposed to strong sunlight, a skin irritation.

Recent infestations have been observed in N.W. San Benito County.

Chemical suppression of small infestations using glyphosate is recommended in spring. Hand digging or pulling of young, isolated plants can be effective. Cutting or mowing are ineffective as management methods; however, they may help prevent spread. Burning encourages growth.

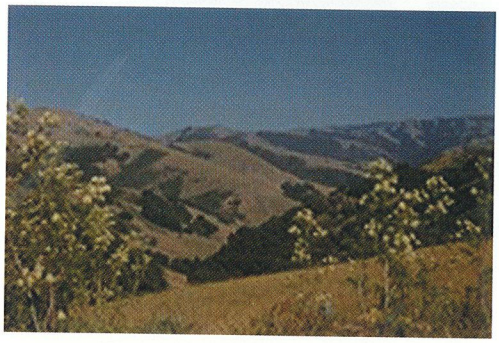
NOTES:

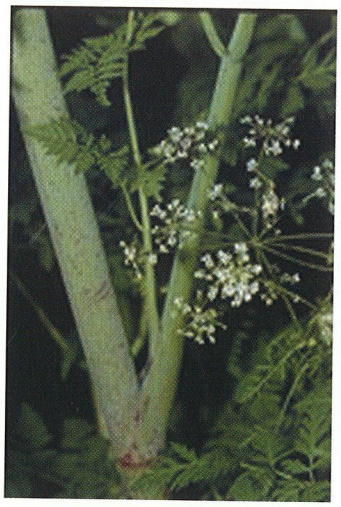


Brousseau (flower)

Webber (landscape)

Corsi (stem/flower)





Poison Hemlock
Conium maculatum
Apiaceae: Carrot family

Biennial with hollow purple spotted **stems** up to 7 feet in height. First years **leaves** form a basal rosette of highly dissected "carrot-like" leaves. The second year these plants send up a flowering **stalk**. This stalk has leaves along the axis, and is terminated by a large umbel of white **flowers**.

Poison Hemlock is native to Europe, North Africa, and Asia. Found commonly along creeks and near old stockponds and drainage ditches.

Found throughout San Benito County, though restricted to areas of at least seasonal moisture. Although this plant is widespread in the county, it does not occupy all potential habitat. This makes it imperative that measures are taken to prevent the expansion of the current populations. This plant is poisonous to animals and humans when ingested.

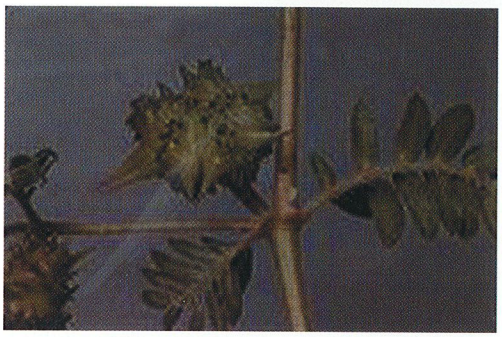
Small populations are most easily controlled by hand pulling with proper safety gear. Due to its biennial nature, control can be very effective even if some first year plants are missed, as long as follow-up control occurs. Chemical control for this species has been shown to be effective, but timing is critical.

NOTES:

Webber (fruit)

Brousseau (entire plant)

Abbas (flower)



Punctureveine
Tribulus terrestris
Zygophyllaceae: Caltrop Family

Annual with prostrate or somewhat ascending, mat forming, trailing stems, each about 1/2 to 5 feet long. **Leaves** opposite, hairy, and divided into 4 to 8 pairs of leaflets. **Flowers** yellow, with five petals. Flowers April to October. **Fruit** hard, about 1/2 inch across, separating into five parts when mature, each with 2 to 4 sharp, hard spines, resembling a goat's head.

Native to Mediterranean. Grows in pastures, cultivated fields, waste areas, and disturbed sites such as roadways. Toxic to livestock in vegetative condition. It particularly thrives in sandy and sandy loam soils. The hard spiny burs damage wool, and may be injurious to livestock as well as bare feet, dogs' pads, and bike tires. Other common names include goathead, caltrop, and Mexican or Texas sandbur.

Puncturevine has been found in disturbed soils throughout San Benito County.

Cultivation with disk or narrow after Puncturevine is up, reduces the population of seeds. Crop competition is essential to long-term Puncturevine control. Chemical control – Herbicides can be effective but must be used along with proper cultivation techniques.

NOTES:

Russian Thistle
Salsola tragus
Chenopodiaceae: Goosefoot Family

Russian Thistle (also referred to locally as Tumbleweed) has also been called *S. kali var. tenuifolia*, *S. pestifer*, and *S. iberica*.

The mature **annual** plant appears bushy and is from 1/2 to 5 feet high. The **branches** are slender, stout, and most hairless. At maturity, the plant is gray to grayish brown. It breaks away from the root at soil level and is blown around fields and roads scattering seeds, hence the name "tumbleweed". **Leaves** resemble threads or pine needles and sometimes have a whitish, waxy bloom. Like the branches, the leaves become tough and prickly with age. **Flowers** are inconspicuous, whitish, and clustered at the base of the leaves. They have no petals but their outer green whorls (calyx) have five wings and under magnification may look like petals. **Fruit** have seeds that are gray to brownish yellow with coiled embryos that are visible and look like small snails.

Native to Russian, it is well adapted to cultivated dryland agriculture and over-grazed rangeland.

It is found in all areas of San Benito County.

In farmland, cultivation after harvest is recommended. Chemical control in rangeland can be effective.

NOTES:

Tamarisk or Saltcedar
Tamarix ramosissima
Tamaricaceae: Tamarisk Family

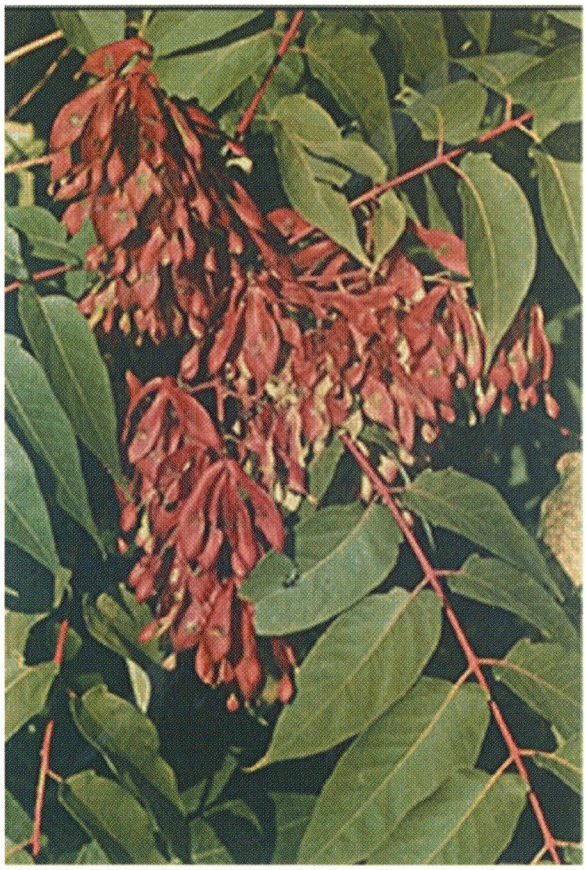
Deciduous **shrubs or small trees** growing to 12 -15 feet in height and forming dense thickets. **Branches** are slender with gray-green foliage, bark of young branches is smooth and reddish-brown. As the plants age, the bark becomes brownish-purple, ridged and furrowed. **Leaves** are scale-like, about 1/16 inch long and overlap each other along the stem. They are often encrusted with salt secretions. **Flowers** are pink to white and appear March to September, in large numbers in dense masses on 2-inch long spikes at branch tips.

Native to Eurasia and Africa. Establishes in disturbed and undisturbed streams, waterways, bottomlands, banks and drainage washes of natural or artificial water bodies, moist rangelands and pastures, and other areas where seedlings can be exposed to extended periods of saturated soil for establishment. Can grow on highly saline soils and tolerates alkali conditions, significantly lowers water table and reduces water quality.

Currently found in riparian areas and watersheds throughout San Benito County. Commonly used for horticulture but escapes and spreads quickly.

Can be controlled by five principal methods: 1) applying recommended herbicide to foliage of intact plants; 2) removing aboveground stems by burning or mechanical means followed by foliar application of recommended herbicide; 3) cutting stems close to the ground followed by application of recommended herbicide to the cut stems; 4) spraying basal bark with recommended herbicide; and 5) digging or pulling plants. Follow up of any method is critical.

NOTES:



Tree-of-heaven
Ailanthus altissima
Simaroubaceae: Quassia Family

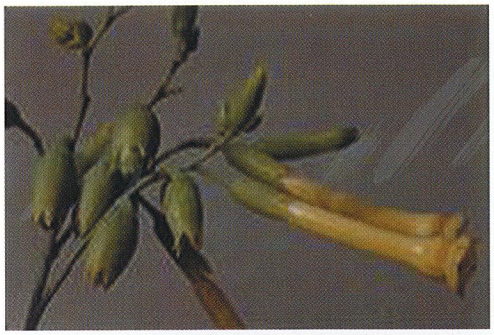
A deciduous **tree,** 30 to 65 feet tall with smooth gray bark. **Leaves** compound, alternate, odd-pinnate, with 11-25 lanceolate leaflets. Tree-of-heaven leaves may be confused with those of sumac or black walnut. **Flowers**, small yellow-green occur in panicles at the ends of branches; male flowers produce a strong odor which has been described as "the smell of burnt peanut butter." The leaves when crushed also produce this distinctive, offensive odor. **Seeds** are centered in a papery sheath called a samara. Samaras are slightly twisted or curled, and twirl as they fall to the ground. They can be borne on the wind great distances from the parent plant.

Native to Asia. Although it is usually found in disturbed areas, it does spread to undisturbed areas and does well on very poor soils.

Currently found throughout San Benito County and was originally used for horticulture.

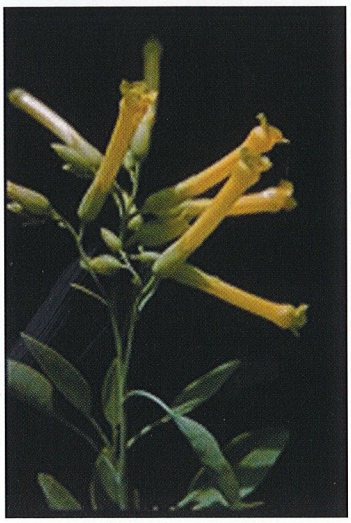
Seedlings can be removed by hand, preferably when the soil is moist to insure removal of the entire taproot, as resprouting can occur from roots. Larger plants should be cut; a glyphosate herbicide, either sprayed onto the leaves or painted onto a freshly cut stump will kill the plant. To insure the herbicide gets into the root system, it is best to apply this herbicide in the late growing season while the plant is transferring nutrients to its roots.

NOTES:



Pusateri

Webber



Tobacco Plant - Tree Tabacco
Nicotiana glauca
Solanaceae: Nightshade Family

An evergreen, bluish green shrub or **small tree**, 6 to 21 feet high, reproduces only by seeds. **Stems** are slender and loosely branching. **Leaves** alternate, 1 1/2 to 6 inches broad, 3/4 to 2 2/3 inches long, bluish green, eggshaped, and hairless, but covered with a whitish powder which rubs off easily. **Flowers** yellow and tubular, about 1 1/2 inches long, borne on large leafless branches at the ends of the stems, and open during the day. There is little spread between flowers. The **seedpods** are brown, many seeded, 3/8 - 1/2 inch long, somewhat eggshaped or oblong, on curving stalks so they hang downward. The kidneyshaped **seeds** are dark brown, about 1/16 inch long, with a honeycombed and roughened surface.

Native to South America. It grows in sandy or gravelly soils along roadsides, near cultivated areas, around old dwellings and ditch banks. The plants are poisonous to all kinds of livestock and to humans. The leaves and young stems are the most toxic parts of the plant.

Currently found throughout San Benito County, especially in drainages.

Manual and chemical means of control are effective.

NOTES:

Glossary

acuminate	having a long-tapered, sharp tip
alternate	leaf structure not opposite on stem
annual	completing the life cycle in one growing season
awned	a slender bristle-like appendage usually at the end of a structure
axil	the upper angle between axis and branch or appendage, e.g. between stem and leaf
basal	of or at the base
biennial	completing the life cycle in two growing seasons
bolting	stem elongation, typically before flowering
bract	a more or less modified leaf situated near a flower of inflorescence
cauline	borne on a stem, not basal. usually refers to leaves
calyx	collective term for sepals; outermost or lowermost whorl of flower parts
compound	composed of two or more parts
corolla	collective term for petal; whorl of lower parts immediately inside or above calyx
corymbose	cluster of flowers
cotyledon	seed-leaf; a modified leaf present in the seed often functioning as food storage
creeping	to grow along the ground or some structure
cyme	branched inflorescence in which the central or uppermost flower opens before the lowermost flowers
dioecious	flowers unisexual, the male and female flowers on different plants
divided	said of leaves; deeply lobed, the sinuses extending to the base of the leaf or midrib
entire	margins smooth without teeth or lobes

floret	small flower, especially one in a dense cluster; a grass flower
flower	seed-producing structure of a plant
fruit	ripened ovary and its structures that enclose it at maturity
glabrous	smooth, no hairs present
glandular	bearing glands; glandular hairs with sticky substance at the end
glaucous	covered with a generally whitish or bluish, waxy or powdery film
glumes	chaff-like bract; used for the two lower empty bracts of a grass spikelet
herbaceous	having the characteristic of a herb; leaf-like in color and texture
inflorescence	flowering part of a plant; generally used for flowering cluster
lanceolate	lance-shaped; several times longer than wide with broadest toward the base and pointed at the apex
lateral	born on the side of a structure or object
leaf	flat thin part of a plant growing from the base or stem, usually photosynthetic
ligule	the flattened part of a ray floret (family Asteraceae)
linear	narrow and flat with sides parallel as in a leaf
lobed	bearing lobes; generally the sinuses are not half-way to base of leaf or midrib as in oak leaves
monoculture	when referring to a vegetation community, consisting mostly of only one species of plant
monotypic	in reference to classification, when genera are represented by a single species
mucilaginous	wet, slimy substance
nutlet	small, dry nut (or nut-like fruit)
oblong	two to four times longer than wide with the sides nearly parallel as in a leaf
ovate	egg-shaped in two dimensions, widest below the middle, as of a leaf
oxalates	a salt of oxalic acid; a poisonous acid found in some plants
panicle	branched inflorescence in which the basal or lateral flowers open before the terminal or central flowers

palmately	radiating from a common point
pappus	the aggregate of structures such as awns, bristles, or scales arising from the top to the inferior ovary
peduncled	stalk of an entire inflorescence or of a flower or fruit not borne in an inflorescence
perennial	a plant whose life cycle extends for three or more years
persistent	remaining attached after like parts normally fall off
petiole	leaf stalk, connecting leaf blade to stem
phyllary, phyllaries	the name of the bract on the head of a sunflower
pinnate	compound leaf with the leaflets on two opposite sides of an elongated axis
protrusion	a part of a structure that sticks out
pubescent	covered with hairs, generally short soft hairs
racemes	unbranched inflorescence of pediceled flowers that open from bottom to top
ray flowers	showy strap-shaped flower as in the head of a sunflower (family Asteraceae)
recurved	curved outward, downward, or backward
reduced	lessened in size or form
reticulate	net-veined as in a vein pattern on a leaf
revolute	rolled inwards as on a leaf
rhizomatous	stem growing laterally partly or wholly beneath the soil
root	the portion of the plant, generally below ground, that anchors the plant and absorbs moisture and nutrients from the soil
rosette	dense basal cluster of leaves arranged in a circular fashion about one point usually at ground level
rugulose	wrinkle-like
seed	that part of the plant containing the mature embryo from which a new plant can generate
sepal	individual member of the calyx, whether fused or not, generally green
serrate	with sharp teeth directed forward; usually refers to leaf edges

sessile	without a stalk of any kind said of a leaf or flower coming right off of a stem
silviculture	a branch of forestry dealing with the development and care of forests
simple	of only one part; not divided into separate segments; not compound
sinus	the depression or recess between two adjoining lobes as in a leaf
spikelet	in the grass family, the smallest aggregation of florets plus the 2 subtending glumes
stamens	one of the pollen-bearing organs of a flower; male part; made up of filament and anther
stem	the main stalk of a plant; supports leaves, flowers and fruit
style	stalk-like portion that connects ovary to stigma in many pistils
terminal	of or at the end of something
tomentose	covered with densely interwoven, generally matted hairs
toothed	a small marginal lobe; as on a saw, dentate
translocating	process of moving nutrients from the branches to the roots in preparation for hibernation
tuber	a thickened, short, usually subterranean stem having numerous buds called eyes; like a potato
undivided	not divided; of one part
whorled	with three or more leaves or other structures arranged in a circle around a stem or common axis
wings	membranous or thin expansion bordering or surrounding an organ such as a stem
winter annual	an annual plant that germinates in the fall, completing its life cycle the following year

References:

Weeds of the West. The Western Society of Weed Science in Cooperation with the Western United States Land Grant Universities Cooperative Extension Service. Revised 1992.

The Jepson Manual: Higher Plants of California. University of California Press. 1993.

Invasive Plants of California's Wildlands. C.C. Bossard, J.M. Randall, and M.C. Hoshovsky (eds). University of California Press. 2000.

CalEPPC web information at http://www.caleppc.org

Calflora web information at CalFlora.edu

Invasive Weed Survey

Observer: _____ Phone: _____

(name and affiliation) (Daytime)

Weed Species: _____ Date: _____

Estimate of Infestation:

_____

(area size and /or number of plants)

Descriptive Location:

_____

(identifying landmarks, directions to site, etc.: please dreaw map on back)

Section: _____ , Township: _____ , Range: _____ , 1/4: _____

Site Status:

_____

(roadside, rangeland, pasture, forest, riparian, specific crop, etc.: ownership if known)

Eradication Action:

_____

(none; or method: mechaincal, biocontrol, chemical – what used and at what rate?)

Other Comments:

_____

_____

MAP

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Other Comments:

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MAP

Contact Information

USDI Bureau of Land Management	20 Hamilton Ct Hollister, CA 95023	(831) 630-5000
National Park Service	5000 Hwy 146 Paicines, CA 95043	(831) 389-4485
San Benito County Agricultural Commissioner	3224 Southside Rd., Hollister, CA 95023	(831) 637-5344
California Dept of Transportation	50 Higuera St. San Luis Obispo, CA 93401-5415	(805) 549-3124
California State Parks	7800 Cienega Rd Hollister, CA 95023	(831) 637-8186
San Benito County Farm Bureau	530 San Benito St., Hollister, CA 95023	(831) 637-7643
California Dept. of Food and Agriculture	2889 N. Larkin Ave, # 6 Fresno, CA 93727	(559) 445-5031
San Benito County Road Department	3220 Southside Rd., Hollister, CA 95023	(831) 637-4170
San Benito County Cattleman's Assoc.	P.O. Box 820 Hollister, CA 95024	
USDA Natural Resource Conservation Service	2337 Technology Pkwy., Hollister, CA 95023	(831) 637-4360 ext. 3
University of California Co-Operative Extension	649-A San Benito St., Hollister, CA 95023	(831) 637-5346

A Federal, State, County and Private Partnership

Selected Invasive Weeds Of San Benito County

A Field Identification Guide