Weeds: The Good — The Bad — The Ugly

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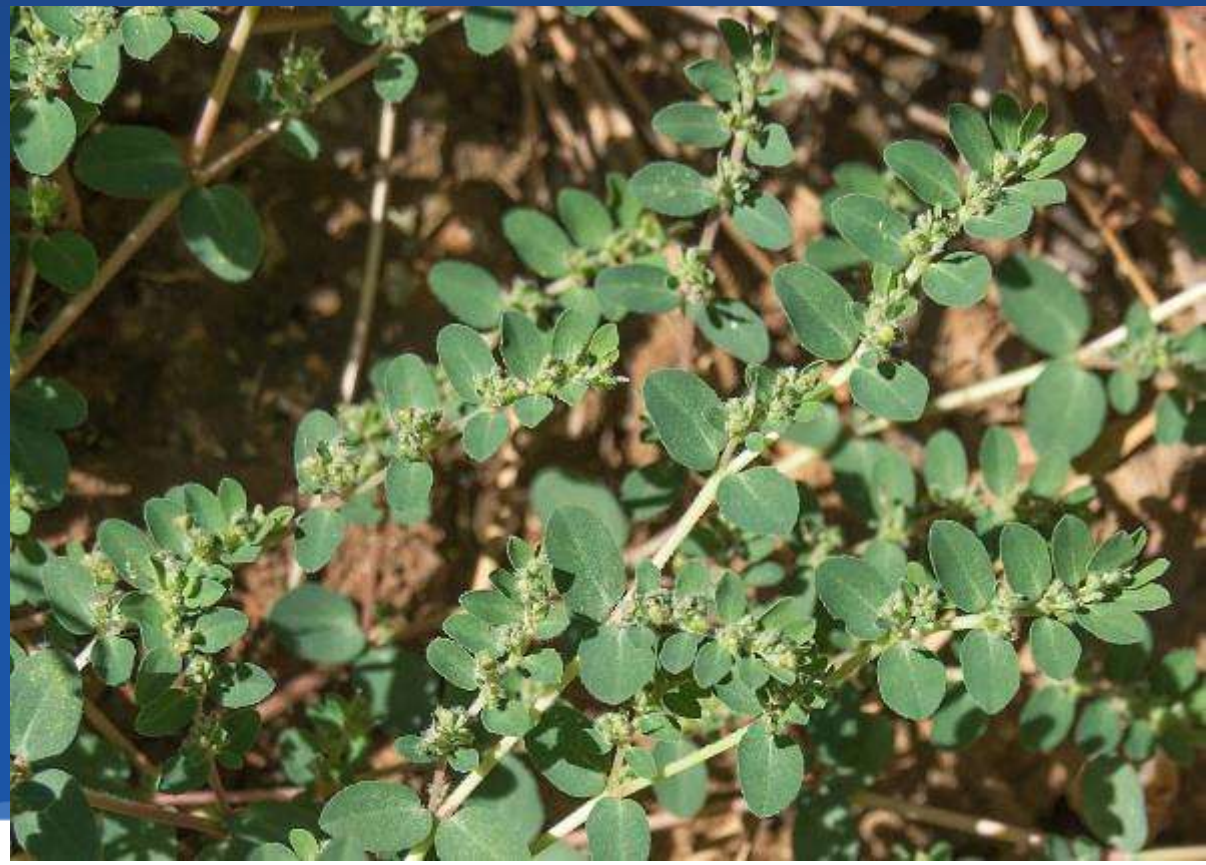
Master Gardeners of Nevada County



UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources
UC Master Gardener Program

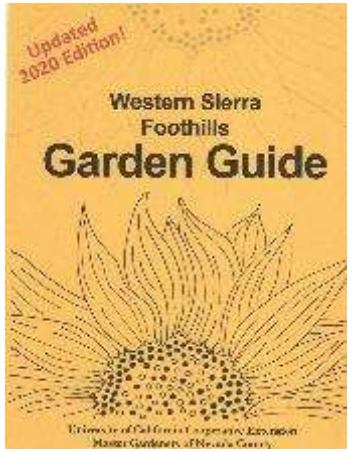
What is a Master Gardener?

We are volunteers, trained by the University of California to share research-based information with home gardeners.

We are part of a statewide educational program designed to extend information from the University to you.

What community services do we provide?

- Free Workshops
- Farmer's Market booth, Grass Valley, Saturdays, 8-noon (thru September)
- Live radio show "Master Gardeners & Friends" on KNCO 830 AM, Saturdays, 10-noon
- Western Sierra Foothills Gardening Guide – at Farmer's Market and local nurseries



- Demonstration Garden at NID, 1036 W. Main St, Grass Valley
- Daffodil plantings in public spaces
- Got Questions? Visit NCMG.ucanr.org for one-to-one garden help

What We Will Cover

- Definitions and characteristics of weeds
- History of weeds
- Why weeds are beneficial or a problem
- Identifying weeds and resources to use
- Common weeds
- Weed management strategies
- Living with weeds

What is a weed?

Definition and History

Benefits and Problems

Definitions of a weed

Any plant growing where it is not wanted

Weeds are plants whose undesirable qualities outweigh the good

A plant that is out of place and not intentionally sown

A plant whose virtues have not yet been discovered

Characteristics of weeds

- Grow only in proximity to human habitation and cultivation
- No particular requirements for germination
- Special adaptations for dispersal of seeds
- Extensive root system
- Thrive in bare, disturbed/compacted soil

History of weeds

Weeds followed the cultivation of grain crops from the near east to Europe and were well established by 2000 BCE.

Human entourage included grains, weeds, rats, mice, lice, cockroaches and domestic animals.

We encourage these plants by giving them the disturbed habitat that they need.

Benefits: the “good”

- Bring nutrients and water up to surface and down from the air, making them available to microbes and plants
- Break up compaction and control erosion
- Increase organic matter as they continually grow and die
- Provide habitat for microbes and animals
- Attract beneficial insects
- Have nutritional or medicinal purposes and are cultivated in other countries
- Can be diagnostic of soil health

Problems: the “bad”

- Compete for nutrients
- Block sunlight and steal water
- Camouflage pests and diseases
- Habitat for pests to overwinter
- Decrease crop yield
- Share crop diseases
- Only get worse
- Can be fire and tripping hazards
- Can cause bodily harm to humans and animals
- Can be invasive

Horticultural plants that can be invasive

Vinca major

St John's Wort – can be fire hazard

Ivy

Euphorbias

Yerba Buena – minty smell

Lamium

Periwinkle
Vinca major

Perennials that can be invasive

Anemone

Yarrow

Hollyhocks

Daisies

Chinese lanterns

Centhranthus — Jupiter's beard

Acanthus — bears breeches

Oxalis — good groundcover but crowds other plants, including natives

Jupiter's beard *Centranthus ruber*

Invasive shrubs and vines

Himalayan blackberries

Scotch broom — any of the brooms

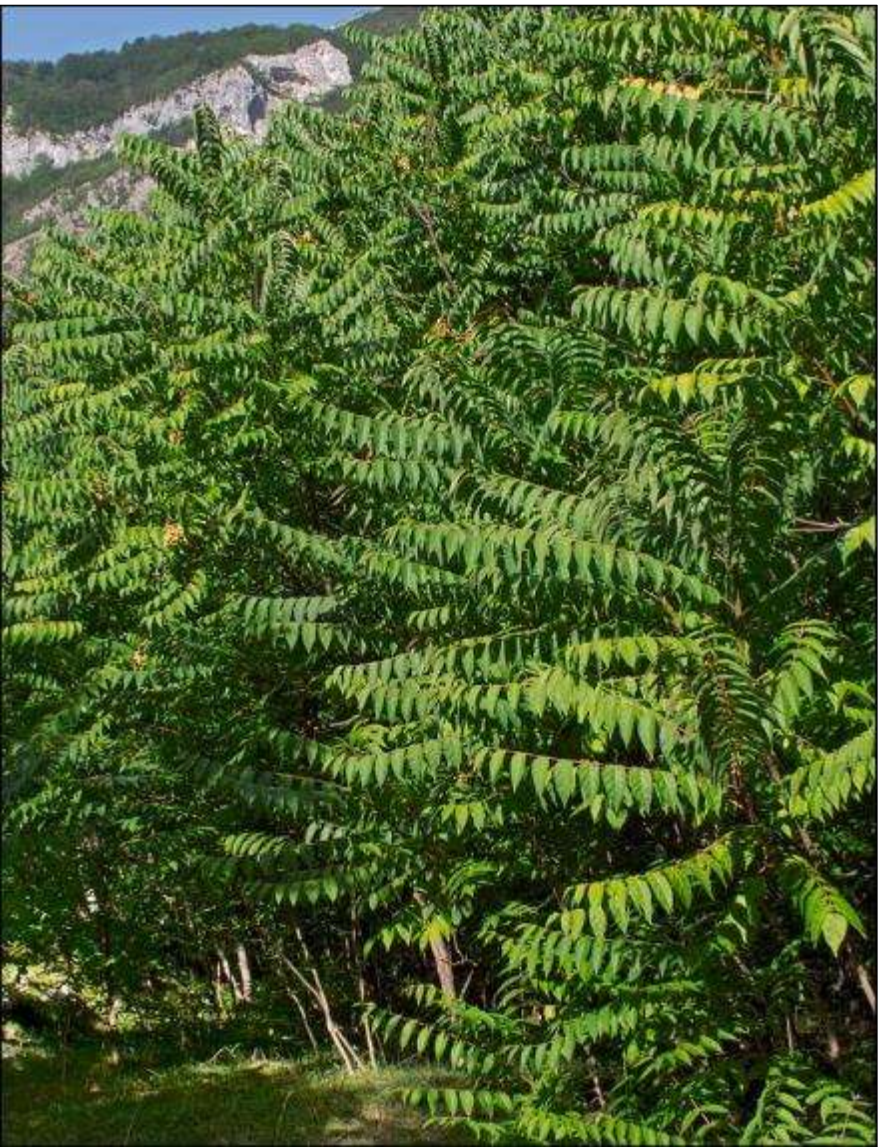
- Crowd out other plants
- Can be a fire hazard
- Proliferate: seed pods explode and shoot 20-35 feet into the air

Honeysuckle

Trumpet vine

Scotch broom
Cytisus scoparius

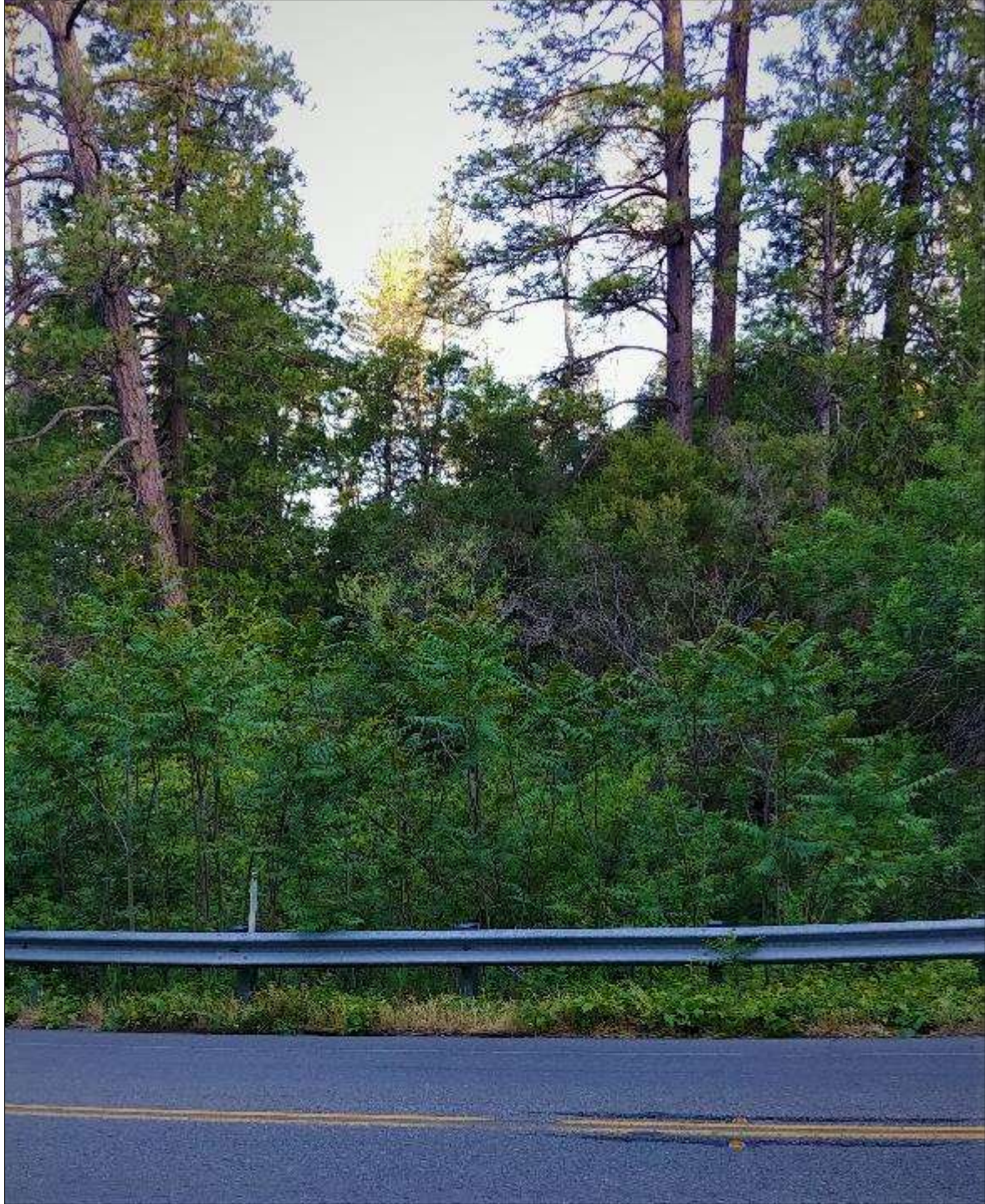
Invasive trees



Tree of heaven

Mimosa

Acacias



Herbs

Mint

Lemon balm — seeds easily dispersed

Thyme — some forms

Oregano

Comments:

Contain with boundary or grow in pots. Place on hard surface to prevent wandering roots.

Elfin or woolly thyme make great groundcovers or lawn replacement and use low water.

Identifying Weeds

If you don’t know ***what*** it is, you won’t know the ***best way to eradicate it***

Spring weeds proliferate in our gardens

Which ones are weeds?

Common weeds in Nevada County

Broom
Catchweed (bedstraw)
Chickweeds
Knotweed
Purslane
Dodder
Mallows
Bittercress
Cutleaf geranium
Erodium spp.
Nutsedge
Plantain
Dallis grass
Field bindweed
Tarweed
Oxalis
Star thistle
Foxtails
Hedge parsley
Spurge

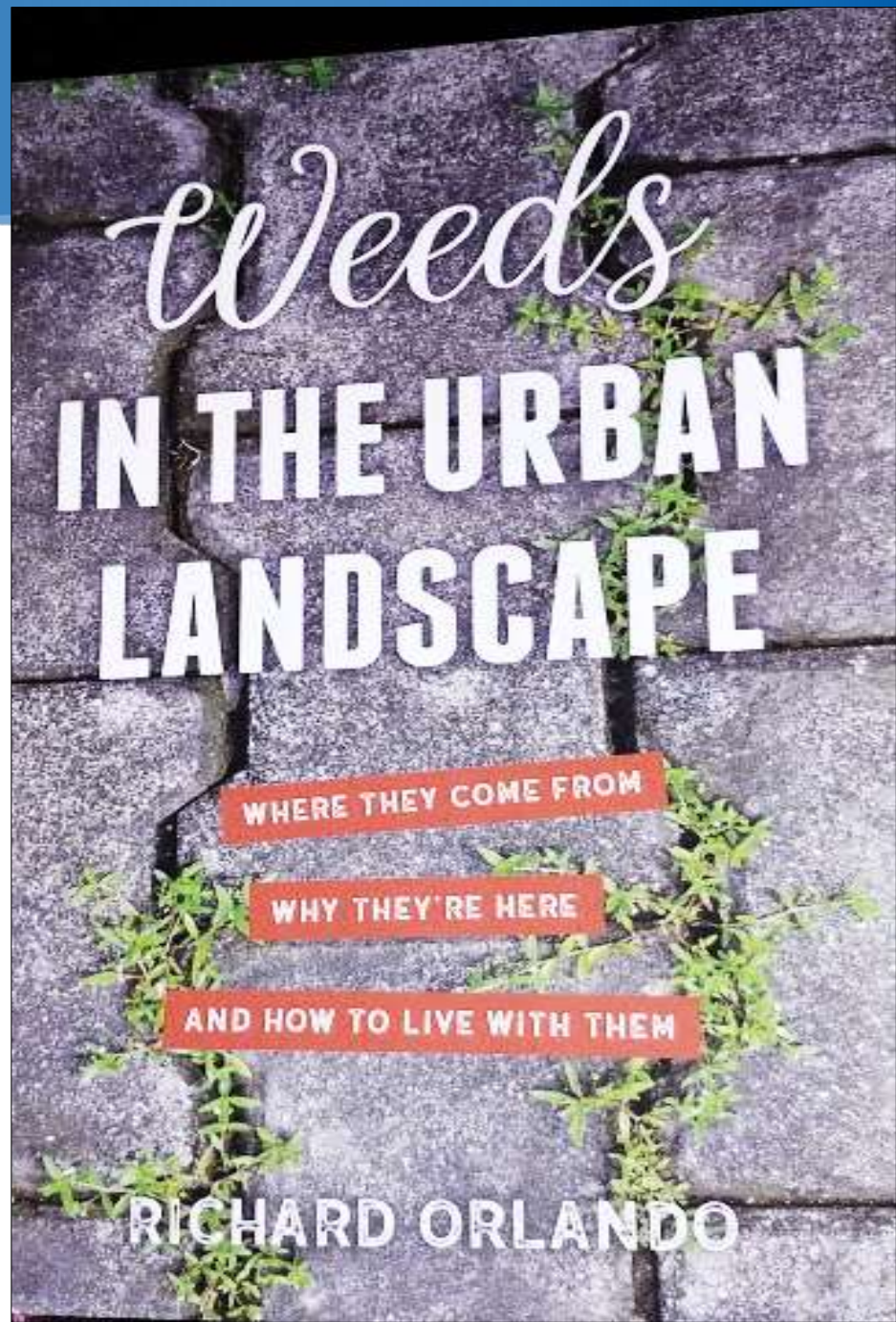
Aids for Weed Identification

- Books
- Online Resources
- Personal observation
- Help from Master Gardeners, nurseries
- Knowledge gained through experience

The Plant Family Approach

A book with interesting facts and detailed drawings of weeds

- Ten important weed families
- History of weeds
- “Classic” weeds (the oldest and most common)
- Medicinal uses
- Folklore



Plant families are grouped by characteristics

- Overall appearance
- Seed formation
- Flower shape
- Number of stamens and styles
- Position of ovaries
- Leaf arrangement
- Other traits unique to the family
- DNA analysis

Recognizing the **family** the plant belongs to **provides a clue** for where to start looking for pictures to match the plant.

Carnation family — Caryophyllaceae

- Low growing, sprawling or mat-forming, opposite leaves, flowers with 5 petals
- Flowers: carnations, silenes, rose campion, baby's breath
- Weeds: chickweed, spurries

common chickweed
Stellaris media

Composite family — Asteraceae

- Many food, ornamental and medicinal plants
- Flowers: daisies, sunflower, echinacea, marigolds, dahlias, ageratum, thistle
- Foliage plants: santolina, artemisia
- Crops: lettuce, chicory, artichokes
- Numerous weeds

Weed or child's bouquet?
dandelion
Taraxacum officinale

7-foot-tall experiment

If a weed chooses its own happy location, how big will it get?

prickly sow thistle

Sonchus asper

Clasping leaves with sharp points and milky sap

milk thistle (with Sarah's dog ball)
Silybum marianum
Distinctive white veins on green leaves,
large purple flower

bull thistle
Circium vulgare

common groundsel or
old man of spring
Senecio vulgare

Black-tipped phyllaries

common or
hairy cat's ear
Hypochaeris radicata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Amaranth family — Amaranthaceae

- Pigweeds were named that because they were fed to hogs
- Ornamental amaranths: Love-lies-bleeding, celosias
- Historically, grain amaranths were grown for food, providing high quality protein, and leaves were cooked like spinach
- Often grouped with Goosefoot family

pigweed or low amaranth
Amaranthus deflexus

Goosefoot family — Chenopodiaceae

- Often grow in saline habitats, very drought resistant
- Triangular leaves, tiny greenish flowers in spikes, deep-rooted
- Food: spinach, beets, sugar beets, chard, epazote
- Quinoa offers high-quality protein
- Similar to Amaranth family

lamb's quarters
Chenopodium album

Grass family — Poaceae

- One of the largest plant families
- Monocotyledons (grow with one seed leaf), narrow parallel-veined leaves with nodes, fibrous roots
- Many weeds: Foxtail barley, orchard grass, crabgrass, Dallis grass, giant reed, Bermuda grass (good lawn grass when wanted)
- Bamboo can be a problem. Grow in pots or contain in the ground. Clumping spreads less than running.

foxtail barley
Hordeum jubatum* ssp. *jubatum

Mustard family — Brassicaceae

- Flowers with 4 symmetrical petals; seeds elongated or chunky pods that split open to dispense seeds
- Flowers: wallflowers, alyssum, stocks, candytuft, money plant
- Cruciferous crops: Brussel sprouts, cauliflower, broccoli, kale, radish, cabbage, bok choy
- Many common weeds

field mustard
Brassica rapa

little bittercress
Cardamine oligosperma

It starts out as a charming rosette with interesting leaves. The plant can get 12 inches tall.

Dry pods pop open with the slightest touch and will pepper you, thus the name “artillery plant.”

Nightshade family — Solanaceae

- Also called potato family
- Crops: potatoes, tomatoes, eggplant, peppers
- Ornamentals: petunias, nicotiana, angel's trumpet, Chinese lantern
- Parts of some plants are poisonous: datura, tomato leaves and roots

black nightshade
Solanum nigrum

Parsley (or Carrot) family — Apiaceae

- Hollow stems, deep taproots, small flowers, finely dissected compound leaves, umbel flowers
- Culinary, medicinal, horticultural uses
  - Fennel, anise, cumin, coriander, caraway, dill, celery, parsley
  - Attract beneficial insects
- Weeds: fennel, poison hemlock, Queen Anne's lace, hedge parsley

Fennel
Foeniculum vulgare

poison hemlock
Conium maculatum

- Neuro toxic causing paralysis and respiratory failure
- All parts are poisonous
- Important to differentiate from wild fennel and Queen Anne’s Lace
- Grows 6 to 10 feet tall
- Leaves are large (1 to 2 feet) with fern-like appearance
- White flower umbels vs. yellow of fennel

How to identify poison hemlock

- Hallmark: purple-spotted stem
- May have a “mousy” odor
- Small umbel (cluster of flowers)
- Generally grows in moist areas

poison hemlock (left) vs. Queen Anne’s lace (right)

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hedge parsley
Torilis arvensis


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Seeds

Tiny flowers

hedge parsley (left) and CA poppy (right) look similar when young

Hedge Parsley

It’s the seed that destroys socks!

Pea family — Fabaceae

- Also known as legumes
- Typical pea flowers have 5 irregular petals; one-chambered seedpods have seams top and bottom
- Ornamentals: lupines, brooms, sweet peas, wisteria, locusts
- Weeds: clovers, bur clovers, vetches, some acacias, brooms

Scotch broom
Cytisus scoparius

spring vetch
Vicia sativa

- One or two 1-inch flowers appear in the leaf axils
- On winter vetch, *Vicia villosa*, multiple flowers appear at the stem tips
- Often included in cover crop mixes
- Both vetches have spread into our gardens and twine through our plants

Rose family — Rosaceae

- Regular 5-petal flowers with numerous stamens; often have thorns or prickles
- Vigorous plants, many seeds spread by birds
- Ornamentals: roses, pyracantha, cotoneaster, red-leaved plums
- Crops: fruit trees, strawberries
- Weeds: Himalayan blackberry, escaped ornamentals

Himalayan blackberry
Rubus armeniacus

Learning through observation

- Look closely at details
  - Get down on your hands and knees if needed
  - Use a magnifier or take a photo and zoom in
  - Note any unusual details
- Work alongside someone who shares a knowledge of weeds
- Look at pictures in weed books
- Contact the Master Gardener Hotline with a photo or sample
- Experiment with plant ID apps on cell phone (may or may not help)
- Take a sample to a nursery (in a plastic bag)
- Use online tools to help identify what you see

UCANR's IPM Website: www.ipm.ucanr.edu

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Weed photo gallery

The UC IPM Weed Photo Gallery includes many, but not all, weed species commonly found in California farms and landscapes.

Choose a category below or skip to a **LIST OF ALL WEEDS**.

Identify your weeds

Broadleaf
Leaves are wide, veins branch out in different directions.
Identification | **Tutorial** | **Broadleaf list**

Grass
Leaves are narrow, arranged in sets of two; stems are rounded or flattened.
Identification | **Tutorial** | **Grass list**

Sedge
Leaves are narrow, arranged in sets of three; stems are triangular in cross section.
Identification | **Tutorial** | **Sedge list**

Aquatic
Plants that grow in water for at least part of their life cycle.
Identification | **Aquatic list**

Plant forms


Spreading plants


Plants that form rosettes


Whorled leaves

Mature leaf characteristics


Roundish (orbicular)


Egg to football (ovate to elliptic)


Heart shaped (chordate)


Narrow or oblong (linear)


Lobed edges


Leaflets (compound)


Deeply divided


Featherlike


Clover or shamrock shaped


Hairy


Prickly, spiny, or bristly


Toothed edges


Succulent (fleshy)


Milky sap


Needlelike or grasslike


Leafless or nubby leaves

Suggested plants with similar leaf shape

- Roundish was selected
- 15 weeds are shown
- Find a match with your weed
- Rest your cursor on it to see details, including its seedling appearance
- Note the link at the bottom for the Weed ID Tool if you can’t find a match

Henbit (*Lamium amplexicaule*)

Click on images to enlarge

Henbit is a widespread winter annual or sometimes biennial broadleaf plant. Except for the Great Basin and deserts, it is found throughout California to about 2600 feet (800 m). Dense infestations in winter crops can reduce crop yield significantly. Henbit inhabits agricultural land, open or managed, turf, disturbed sights such as roadsides, and landscaped areas.

Habitat

Open places in managed forests, agronomic and vegetable crop fields, orchards, vineyards, gardens, lawns, landscaped areas, fields, pastures, roadsides and other disturbed, unmanaged areas.

Seedling

Cotyledons (seed leaves) are oval to nearly round, with a round to sharply lobed base, and a squared to slightly indented tip. They have smooth edges and hairy stalks. The first and subsequent leaves are somewhat hairy and broadly oval, with a lobed base, depressed veins, and rounded teeth on the edge.

Identify a weed
List of all weeds
Key to weeds in turf

Mature plant

Mature plants can grow to 1.3 feet (0.4 m) tall. Stems are square in cross-section and often branch near the

Henbit, giraffe's head, or dead nettle, *Lamium amplexicale*

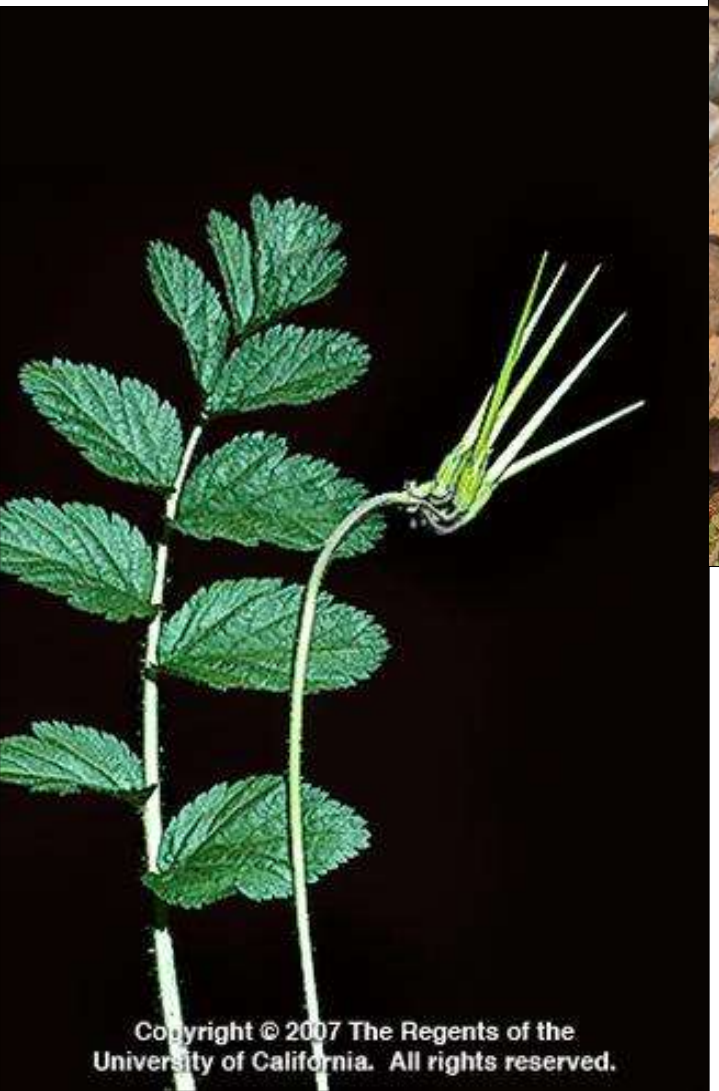
Small unusual flowers, square stems, whorled leaves at top of stem, paired leaves below

cutleaf geranium
Geranium dissectum

Seedling is a rosette with roundish, lobed leaves. More mature leaves have deeply cut lobes.

The stubby cranesbill has a ring of seeds that rolls to the top when the seeds mature.

filaree
Erodium spp.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redstem filaree
Erodium cicutarium

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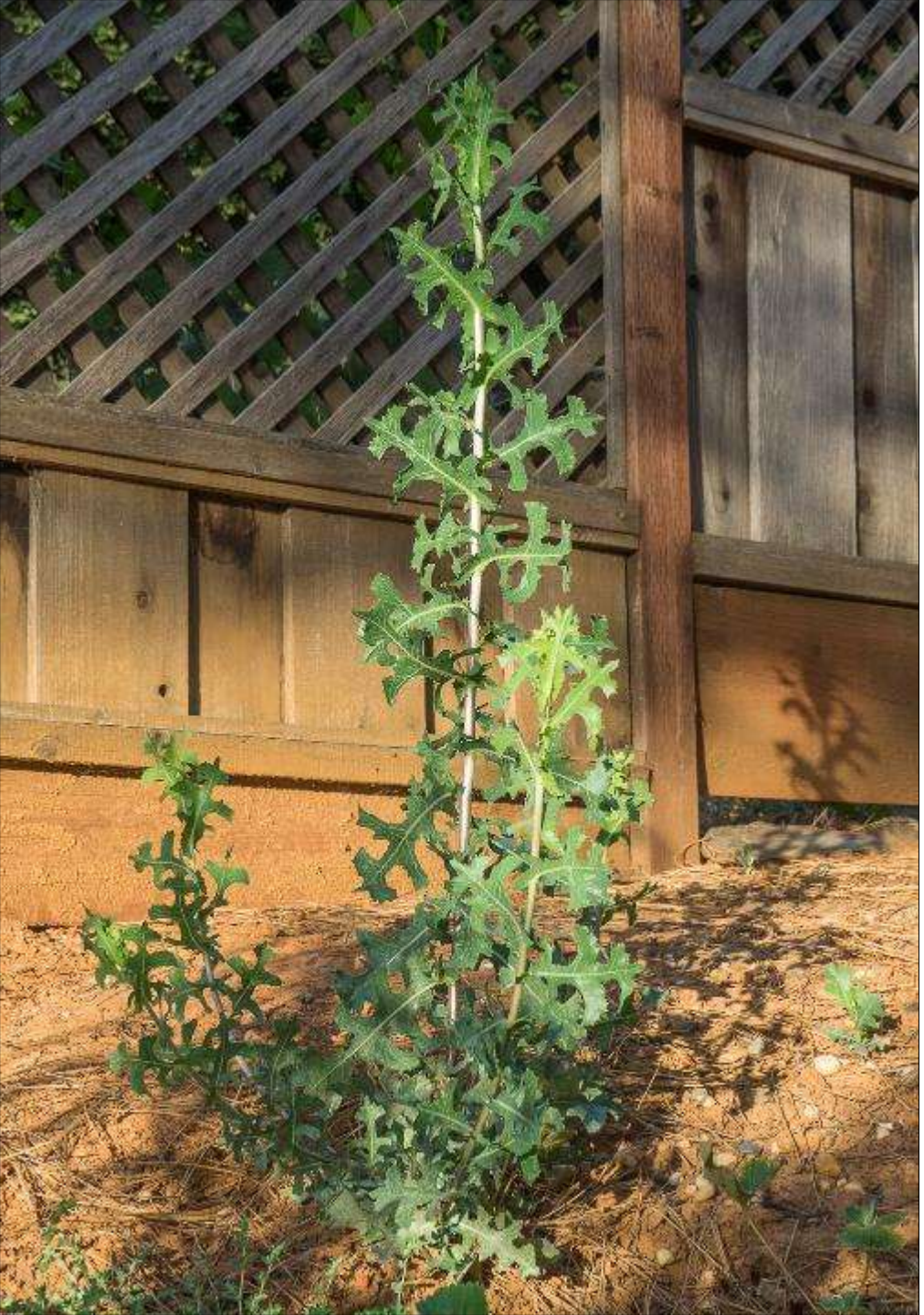
Seed tails coil when dry, unfurl when moist, drilling the seed into the ground. All filarees do this. A filaree may also be called a cranesbill or storksbill.

whitestem filaree
Erodium moschatum



prickly lettuce
Latuca serriola

Wild lettuces have milky sap and a row of teeth on the underside of leaves

field bindweed (wild morning glory)
Convolvulus arvensis

Bindweed flowers look like miniature morning glories

garden burnet
Poterium sanguisorba

Rosette of long compound leaves and deep taproot

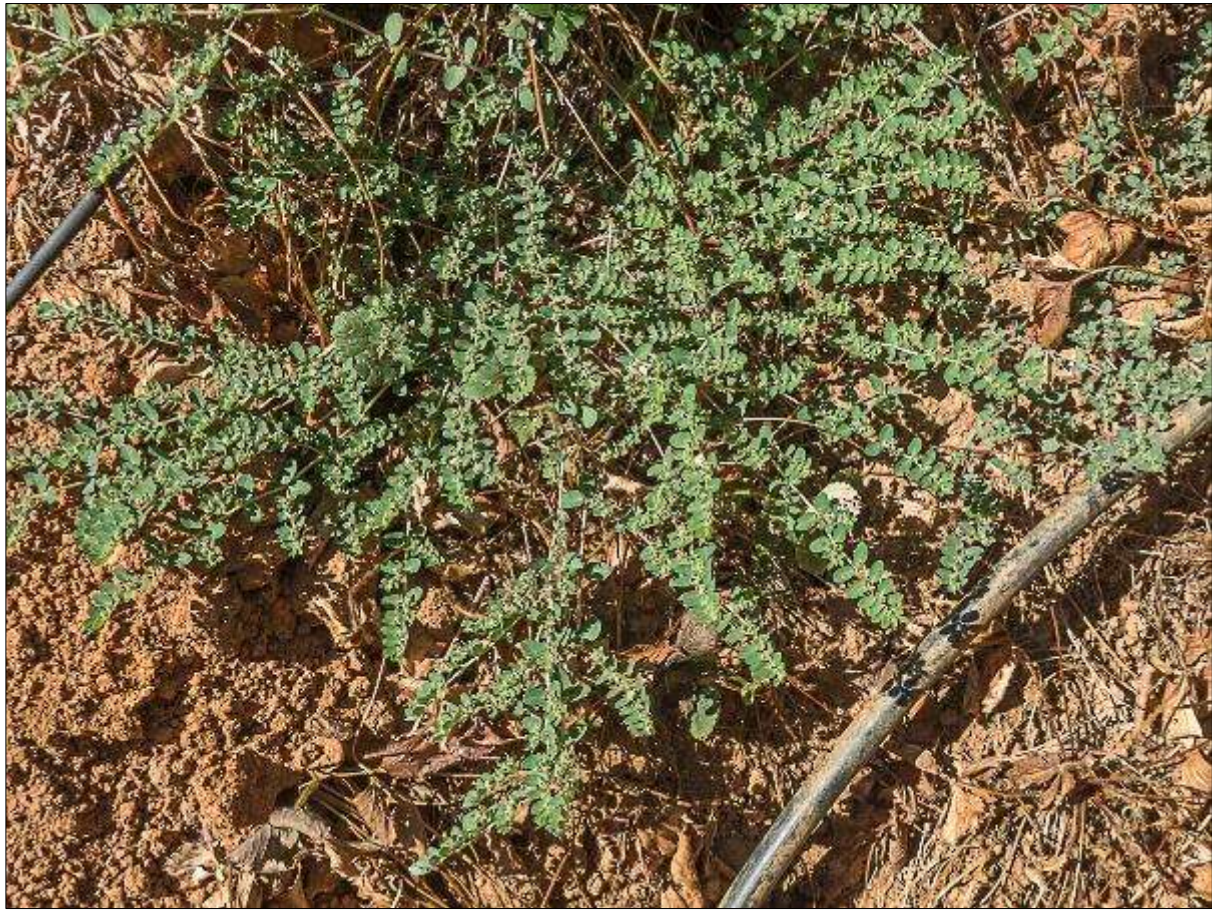
creeping wood sorrel
Oxalis corniculata

A variant has dark purple leaves. Heart-shaped leaves fold along the centerline.

Creeping wood sorrel forms a mat.

spotted spurge *Chamaesyce maculata* (may have dark red spot on each leaf)
creeping spurge *Chamaesyce serpens* (may root at the nodes)

Seeds can be produced 5 weeks after germination.



The mat can be 3 feet in diameter and the milky sap is poisonous to some animals.

common purslane
Portulaca oleracea

- Forms a prostrate mat
- Succulent leaves with smooth edges
- Edible, raw or cooked
- Used for food and medicine for centuries

Common knotweed
Polygonum arenastrum

Wiry stems, mat-forming, deep taproot, papery leaf stipules, often on compacted soil

Burning or stinging nettle
Urtica urens

Serrated leaves with stinging hairs, often in moist areas

Common bedstraw or catchweed
Galium aparine

Whorled leaves that have a sticky feel like Velcro. The plants sprawl on the ground or climb through other plants.

Growing through miner's lettuce

English plantain or buckhorn
Plantago lanceolata

Conspicuous ribs (parallel veins) on the leaves. Flower spike on a tall stalk has a ring of tiny flowers that blooms at the base and gradually moves up to the top.

willowleaf lettuce
Lactuca saligna

A summer and fall weed. There may or may not be small teeth on the midvein on the underside of the leaf.

A half-inch flower opens during the night and ends its bloom by mid-day.

Two major weeds in Nevada County (the “ugly”)

yellow star thistle — **a** serious threat to rangeland, horses (causes “chewing disease”)

- Originated in Turkey, then spread to Spain and carried to new world with Spanish horses
- Seeds are a contaminate of alfalfa and grass seed used for pastures
  - 4-6-foot taproot pulls water away from other plants; consumes millions of gallons of water
  - Germinates from fall to spring as long as water and light are available
  - Doesn’t tolerate shade
- Biological control suppresses about 50% of seeds

yellow star thistle
Centaurea solstitialis

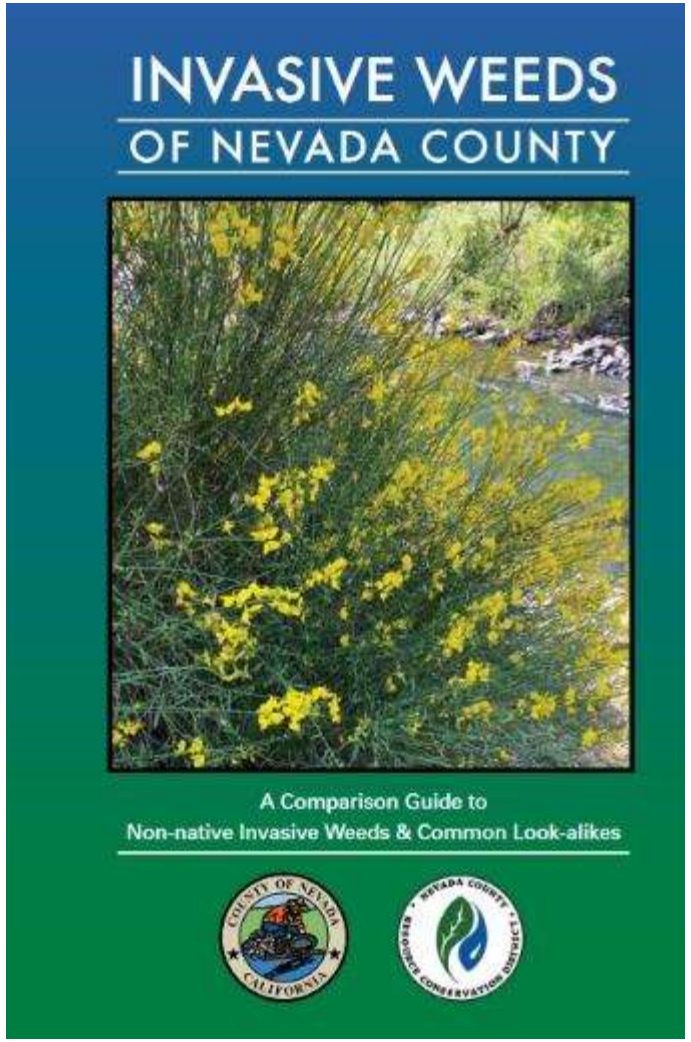
Two major weeds in Nevada County (the “ugly”)

Scotch broom — very invasive; forms dense stands that are highly flammable

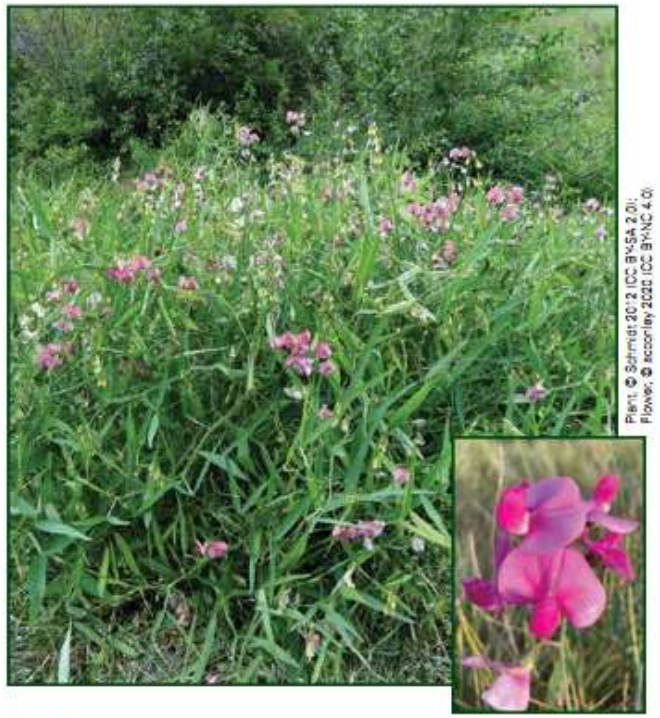
- Originated in western Europe and brought to CA to stabilize dunes
  - Seeds remain viable for decades
  - Seed pods explode during hot weather and can scatter up to 30 feet away during fire
  - To remove, pull up when soil is moist; use weed wrench on large plants
- The Scotch broom gall mite is spreading in CA
- There are four major broom species in California, and all are invasive

Scotch broom
Cytisus scoparius

Invasive Weeds booklet

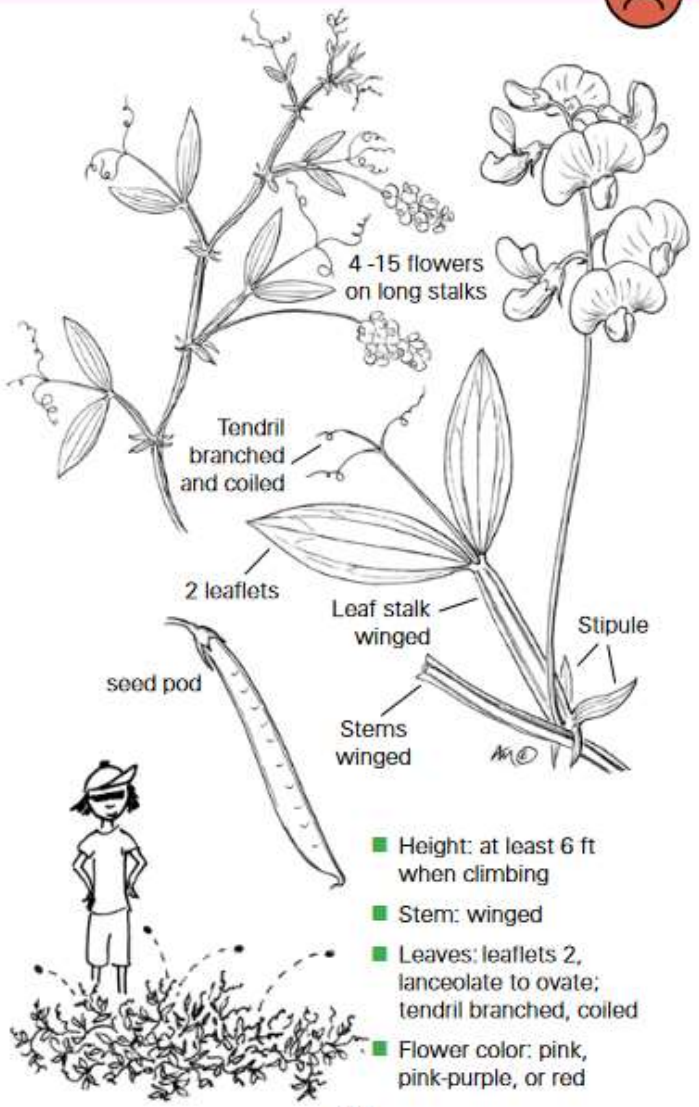


EVERLASTING PEA *Lathyrus latifolius*



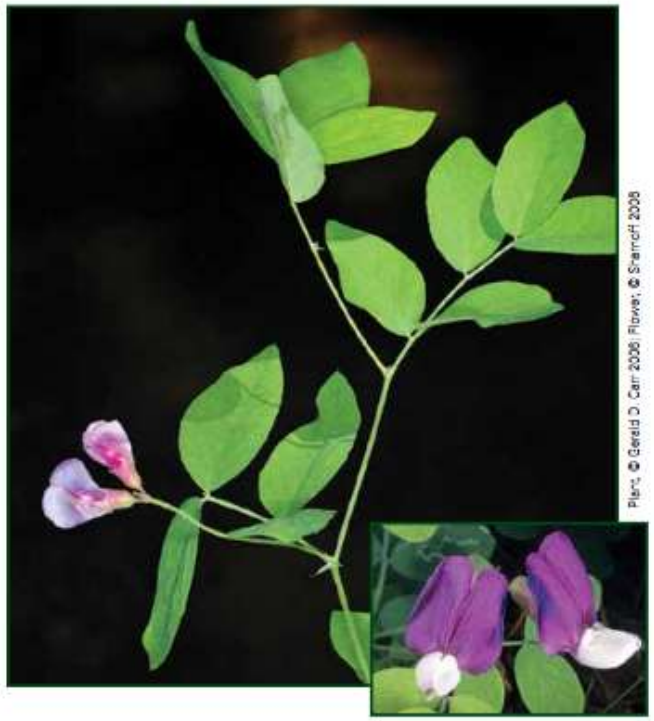
Also Known As	Sweet pea, perennial sweet pea
Habitat	Roadsides, riparian areas, orchards, vineyards, disturbed areas
Life Cycle	Perennial
Flowering Time	May - September
Relative Abundance	Moderate
Management	Cultivate, pull, or dig plants early before flowering; susceptible to herbicide control
Noxious Weed List	B-rated

Non-native and Invasive



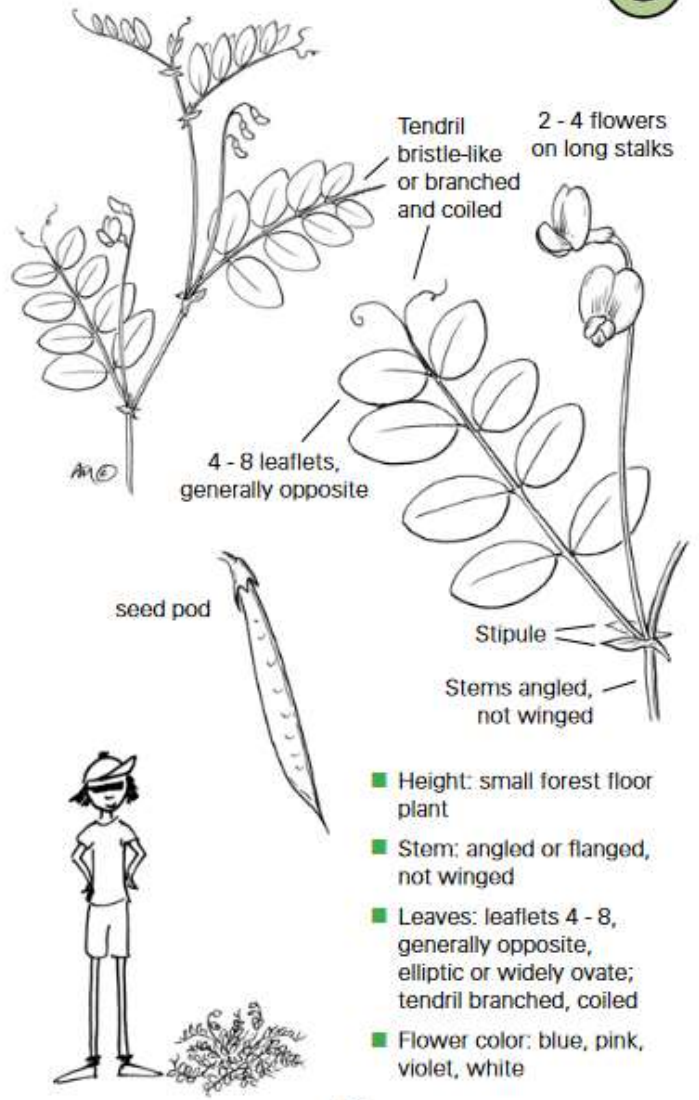
A desirable look-alike (native and non-invasive)

SIERRA NEVADA PEA *Lathyrus nevadensis ssp. nevadensis*



Also Known As	Sierra pea
Habitat	Conifer, mixed forest; shade tolerant
Life Cycle	Perennial
Flowering Time	March - June
Relative Abundance	Infrequent
General Information	Desirable native plant; do not disturb

Native Look-alike



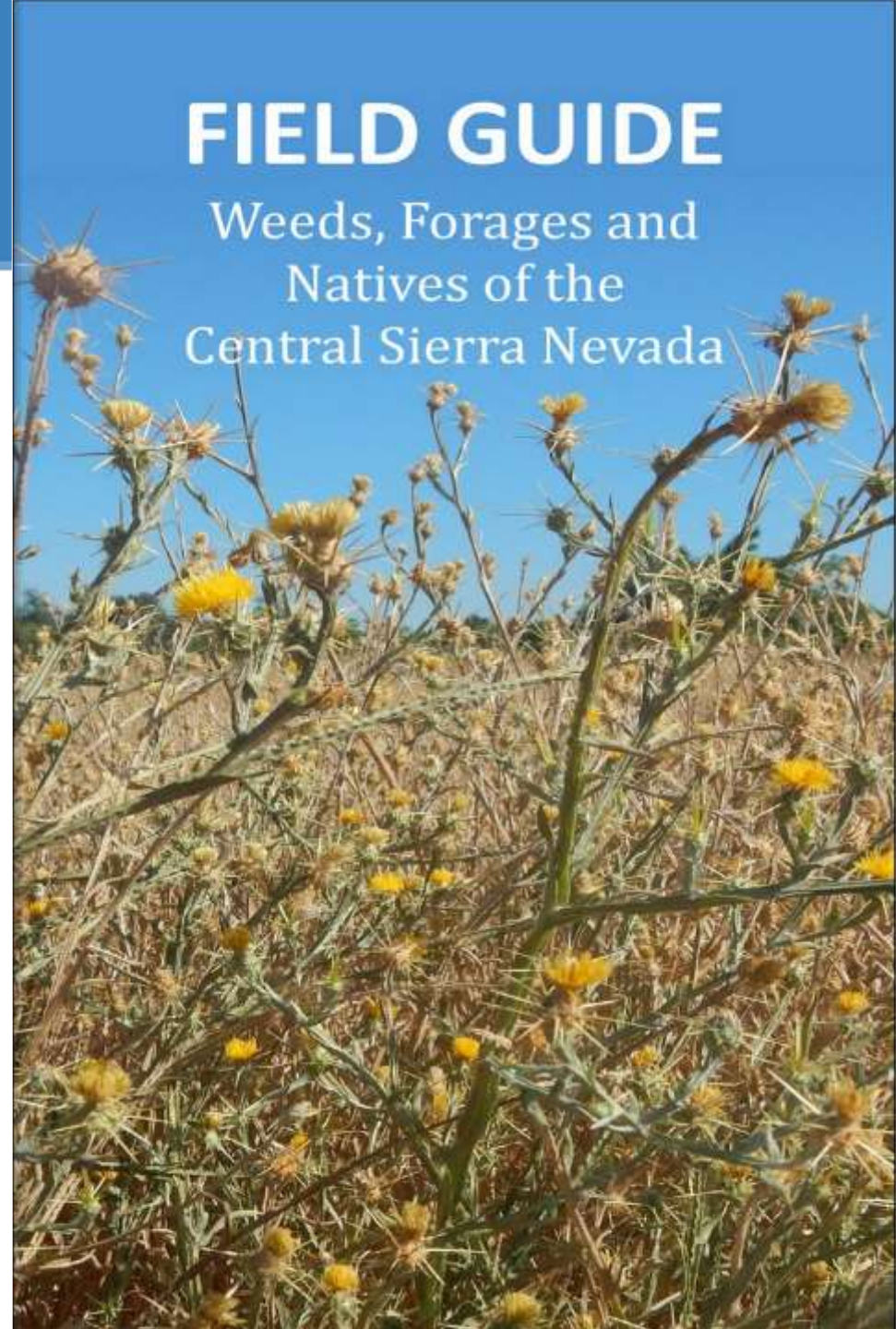
- Height: small forest floor plant
- Stem: angled or flanged, not winged
- Leaves: leaflets 4 - 8, generally opposite, elliptic or widely ovate; tendril branched, coiled
- Flower color: blue, pink, violet, white

Field Guide for plants commonly found in backyards

- Thistles
- Grasses
- Trees and shrubs
- Vines
- Non-thistle broadleaves

Find online at

http://mgeldorado.ucanr.edu/



A selection from the Field Guide includes:

- Description of plant
- How the plant reproduces
- Where it is from
- Where it likes to grow
- Method of control
- Links for more information

Pokeweed

Phytolacca americana var. americana

Pokeweed Family (Phytolaccaceae)

Unless otherwise stated, photos by J.M. DiTomaso

Pokeweed growing in a field (above), resprouts from roots (below), close up of berries (right)

Pokeweed

Phytolacca americana var. americana

Pokeweed Family (Phytolaccaceae)

CDFA: Not rated
Cal-IPC: Limited

Description

Erect, herbaceous perennial shrub that grows to 8 feet tall, with large leaves and showy purple-black berries. It has a smooth, stout, purplish stem that branches extensively. The bright green, elliptic leaves are simple, alternate on the stem and have a strong unpleasant scent when crushed. Leaves can be up to 7 inches wide and 1 foot in length. Above ground growth dies back every year and regrowth occurs each spring from a very large white fleshy rootstock. The flowers form in clusters that hang from branches. Flowers are white to magenta and give way to distinct deep purple berries with dark ink colored juice. All plant parts, especially the root, contain numerous toxins and can be fatal to humans and livestock when ingested raw. When properly prepared parts of the plant have been used medicinally and as a food source.

Reproduction

Reproduces only by seed. Most seeds drop within a few feet of the plant. Longer dispersal is by water and birds. Seeds can persist for multiple years.

Origin and Habitat Description

Native to United States. Commonly found in woodlands, pastures, fields, forest margins, rangelands, vineyards, orchards, fencerows, roadsides, ornamental landscapes and disturbed sites.

Control

- Hand pulling can be effective on small plants. Large plants have well established root systems making removal difficult.
- Cultivation or cutting before fruits mature can be effective.
- Grazing is not effective because the plant is toxic to livestock.
- The broadleaf herbicides 2,4-D, dicamba and triclopyr provide selective control. The non selective herbicides glyphosate and imazapyr also provide control.

More Information

- Weed Control in Natural Areas in the Western United States
- Distribution

Another selection — what a pest!

Punturevine (goatheads)

Tribulus terrestris

Caltrop Family (Zygophyllaceae)

Unless otherwise stated, photos by J.M. DiTomaso

Flowering plant with prostrate growth

Flowering stem

Close up of woody, thorny fruit

Punturevine (goatheads)

Tribulus terrestris

Caltrop Family (Zygophyllaceae)

CDFA: C
Cal-IPC: Not rated

Description
A creeping summer annual growing to 3 feet wide with green to reddish-brown stems, spreading radially from a central taproot. Stems often have hairs that lie flat against the stem. Leaf shape is pinnate, made up of leaflets less than 1/4 inch long, with 3 to 7 pairs of leaflets per leaf. Plants produce small, solitary yellow flowers, which develop into burs with stout spines that can injure people and animals, as well as puncture tires. The foliage contains several compounds that can be toxic to livestock, especially sheep when ingested in quantity.

Reproduction
Reproduces only by seed. Most seeds are dispersed by animals, equipment, and humans. Seeds can persist for 3 to 6 years in the soil.

Origin and Habitat Description
Native to the Mediterranean region. Found on roadsides, railways, vacant lots, urban areas, vineyards, orchards and disturbed areas.

Control

- Hand pulling is effective before flowering and seed production.
- Mowing is ineffective because of the low growth form of the plant.
- Hoeing or shallow cultivation before seed production is effective.
- Grazing is not effective because the plant is toxic to livestock.
- The broadleaf herbicides 2,4-D, aminocyclopyrachlor, dicamba, fluroxypyr, and triclopyr provide selective control. The non selective herbicides glyphosate and imazapyr provide control. Pre emergent herbicides rimsulfuron and chlorsulfuron are effective, but may injure desirables.

More Information

- Weed Control in Natural Areas in the Western United States
- Distribution

Calscape.org — a great tool for native plants

California Native Weeds found on Calscape.org

- turkey mullein
- coyote brush
- miner's lettuce (Indian lettuce)
- nutsedges
- poison oak
- little bittercress (not all are native)

purple nutsedge
Cyperus rotundus

yellow nutsedge
Cyperus esculentus

miner's lettuce
Claytonia perfoliata

poison oak
Toxicodendron diversilobum

Managing Weeds

Integrated Pest Management

Prevention vs. reaction

Control and eradication

Living with weeds

My weeds may differ from your weeds

Weed species vary due to elevation, moisture, sunlight and soil

Different weeds grow in winter, spring and summer

The previous use of the land may influence the weeds that grow

Ignoring weeds will add to the seed bank (seeds waiting underground for the right conditions to germinate)

Seeds are brought to the surface to germinate when we cultivate

Controlling weeds helps to reduce the seed bank, although some seeds are viable for many years

Weeds are pests that we can manage

IPM — UC Davis IPM website

Find information on weed control at http://ipm.ucanr.edu/

- ✓ IPM means Integrated Pest Management
- ✓ Well-designed reference for problems with insects, weeds, diseases
- ✓ Start with the least toxic method
- ✓ Focus on long-term management
- ✓ Science-based guidelines
- ✓ Multi-pronged suggestions

UCANR's IPM Website: www.ipm.ucanr.edu

Prevention vs. reaction

Prevention — Action you take before the weed germinates or grows past the immature stage

Know the life cycle of the weed and what it looks like when starting to grow

Annual — sprouts, develops seeds, rapid dispersal, all in one season

Control early by pulling it up and not allowing it to produce seed

Perennial — may be biennial or persist for multiple years

Pre-emergent early, mulch heavily before flowering

How to discourage weed growth

- Don’t overwater
- Avoid soil compaction
  - Reduces soil health for other plants
  - Some weeds thrive in compacted soil
- Avoid rototilling
  - Some plants regrow from chopped segments (e.g., bindweed, purslane)
- Don’t mow lawns too short

Prevention techniques

Soil preparation — solarize: water well, then cover with thick clear plastic (some weeds require black plastic, e.g., bindweed and star thistle). Leave in place for 2–3 seasons

Rototilling — breaks up soil but opens buried seeds to sunlight. Disrupts the microorganism web, reducing nutrient intake for plant roots

Cover crops — crowds out weeds

Mulch — suppresses weeds

Pre-emergent herbicides — timing is important

Prevention vs. reaction

Reaction — What you do when the weed is growing and maturing

Set your own goals — what can you live with?

Check the IPM website for weed description and methods for management

Control weeds before they go to seed

Revisit the area to monitor weeds (more may germinate, new species may appear)

Reaction techniques

Know the growth pattern — perennial or annual

Perennial — pull out by roots. Moisten soil, grab crown of plant, pull while twisting to get as much of the root as possible. If it regrows, try cutting it back repeatedly to deplete its energy.

Annual — pull, hot water or flame (be very careful)

Control before seeds develop

Mow frequently

Use IPM to determine the desirable method or methods

Cultural control

Mechanical control

Chemical control (herbicides)

Cultural control

- Competitive planting
- Barriers
- Well maintained mulches
- Drip irrigation to reduce water to weeds
- UC Guide to Healthy lawns
- IPM site — turf management
- Mulch to drip line of tree, to 3-4” of plants
- Leave weeds in place until ready to plant something else

Support horticultural plants to reduce weed growth

- Mulch heavily to drip line in trees and to 3-4 inches away from plants
  - Rock mulch not helpful in maintaining water in soil and moderating soil temp
  - Mulch from arborists is best — more organic matter
- Water appropriately — check soil moisture rather than follow a routine schedule
- Compost 1–2 times a year to support soil microbiology
- Avoid compacting soil
- Loosen soil with a turning fork. Avoid rototiller

Mechanical control

Mechanical control includes hand weeding and a variety of tools

What you use depends on:

- the size of your garden
- the size of the weeds
- the location of the weeds
- the type of soil
- your preference for kneeling or standing

Tools for simple mechanical control

Some of our favorite hand tools:

- Hori-hori knife
- Scuffle or loop hoe (hula hoe)
- Swan neck hoe (half moon)
- A sturdy kneepad

Remember gloves, a sun hat, sunscreen, dark glasses, and water!

Chemical control — Herbicides

READ THE LABEL — know type of plant targeted: broadleaf or grass

FOLLOW THE DIRECTIONS FOR DILUTION

Pre-emergent — kills seeds but can affect other plants, good for garden paths

Post-emergent — selective weed targets

- Roundup kills all — non-selective
- Broad leaf and grasses, follow label directions

Most widely used herbicides are glyphosate, dicamba or 2-4-D

Good for poison oak, blackberry

Herbicide safety

- **Read the label - use according to directions!**
- Direct the application to avoid broad application to other plants
- Wash hands after use
- Apply on a non-windy day
- Use recommended strength glyphosate

  Too easy to make a wrong dilution

Living with weeds

Consider the benefits

- Deep tap roots loosen soil compaction
- Erosion control
- Pollinator support – nectar and pollen; thistle, dandelion, etc.
- Insect, bird habitats – hide in foliage, seeds for nutrition, lay eggs on leaves.

Ways to cope

- When removing weeds, put something in to take their place or weeds will return
- Plant grasses or groundcover to crowd out undesirable plants, such as dandelions, maybe star thistle
- Accept a mixed lawn or replace the lawn

There is an amazing variety of design and tiny beauty in a “plant whose virtues have not yet been discovered”

Resources to Explore (listed on our handout)

Calscape: https://calscape.org California Native Plant Society for local native plants

CalWeed Maps: https://calweedmapper.cal-ipc.org/ Find locations of invasive plants, also lists of invasive plants A-Z (click on photos) and problem horticultural plants

Invasive Weeds of Nevada County, Nevada County Resource Conservation District, 2020. https://www.mynevadacounty.com/DocumentCenter/View/37782/Nevada-County-Weed-Booklet-2021?bidId=

Also, *Invasive Weeds of the Tahoe National Forest:* https://www.truckeeriverwc.org/images/documents/TNFWB_Web8-7-09.pdf (US Forest Service Publication R5-TP-o24, 2013)

IPM website: www.ipm.ucanr.edu Pest notes (downloadable), weed tools, and more

Oneto, Scott and Catharine Moné. *Field Guide: Weeds, Forages and Natives of the Central Nevada*. The University of California Cooperative Extension, 2019. https://mgeldorado.ucanr.edu

Orlando, Richard. *Weeds in the Urban Landscape*. Berkeley, North Atlantic Books, 2018. Describes 189 weeds, including folklore and control. Line drawings for indentification.

Thank You! Questions?