

New tools and techniques

Joe DiTomaso, UC Davis

Topics to cover

- Yellow starthistle management
 - Biocontrol with new rust
- Saltcedar biocontrol
- Dalmatian toadflax control
- Yellow flag iris control
- Weed Research and Information Center weed ID program

Topics to cover

- Yellow starthistle management
 - Biocontrol with new rust
- Saltcedar biocontrol
- Dalmatian toadflax control
- Yellow flag iris control
- Weed Research and Information Center weed ID program



©2003 Regents of the University of California







Topics to cover

- Yellow starthistle management
 - Biocontrol with new rust
- Saltcedar biocontrol
- **Dalmatian toadflax control**
- Yellow flag iris control
- Weed Research and Information Center weed ID program





2008-2009

6/4/09 evaluation

Dalmatian toadflax

Application timing	Product	Active ingred	Product oz/ac	% cover toadflax
Rosette (1/16/08)	Telar	Chlorsulfuron	3	12.5
Rosette	Escort	Metsulfuron	2	27.5
Rosette	KJM44	Aminocyclopyrachlor	2.5	15
Rosette	KJM44	Aminocyclopyrachlor	5	7.5
Rosette	Milestone	Aminopyralid	7	21.3
Rosette	Milestone	Aminopyralid	14	21.3
Rosette	Tordon	Picloram	32	13.3
Rosette	Untreated	---	---	31.3

2008-2009

6/4/09 evaluation

Dalmatian toadflax

Application timing	Product	Active ingred	Product oz/ac	% cover toadflax
Bolting (4/22/08)	Telar	Chlorsulfuron	3	22.5
Bolting	Escort	Metsulfuron	2	27.5
Bolting	KJM44	Aminocyclopyrachlor	2.5	22.5
Bolting	KJM44	Aminocyclopyrachlor	5	13.8
Bolting	Milestone	Aminopyralid	7	17.5
Bolting	Milestone	Aminopyralid	14	21.3
Bolting	Tordon	Picloram	32	16.8
Bolting	Untreated	---	---	28.8

2008-2009

6/4/09 evaluation

Dalmatian toadflax

Application timing	Product	Active ingred	Product oz/ac	% cover toadflax
Dormant (11/18/08)	Telar	Chlorsulfuron	3	6.8
Dormant	Escort	Metsulfuron	2	30.0
Dormant	KJM44	Aminocyclopyrachlor	2.5	9.3
Dormant	KJM44	Aminocyclopyrachlor	5	0.8
Dormant	Milestone	Aminopyralid	7	21.3
Dormant	Milestone	Aminopyralid	14	3.0
Dormant	Tordon	Picloram	32	6.3
Dormant	Untreated	---	---	30.0





Topics to cover

- Yellow starthistle management
 - Biocontrol with new rust
- Saltcedar biocontrol
- Dalmatian toadflax control
- **Yellow flag iris control**
- Weed Research and Information Center weed ID program

**Use northern pond for
herbicide study**





©2003 Regents of the University of California

Yellow flag iris (*Iris pseudacorus*)



Yellow flag iris control

Herbicide	% Control
Glyphosate 2% foliar	97
Glyphosate 4% foliar	98
Imazapyr 1% foliar	98
Imazapyr 2% foliar	100
Imazapyr 3% foliar	100
Glyphosate 2% + Imazapyr 1% foliar	99
Glyphosate 4% + Imazapyr 1% foliar	98
Glyphosate 4% + Imazapyr 2% foliar	100
Triclopyr 4% foliar	42
Glyphosate 20% drizzle	86
Imazapyr 20% drizzle	99
Untreated control	0



Imazapyr 3% foliar (Habitat) + 1%
Competitor surfactant



Imazapyr 20% drizzle
(Habitat) + 30%
Competitor surfactant

Drizzle Application



Drizzle



Herbicide was sprayed in a "W" pattern with each shrub taking 1 second to treat

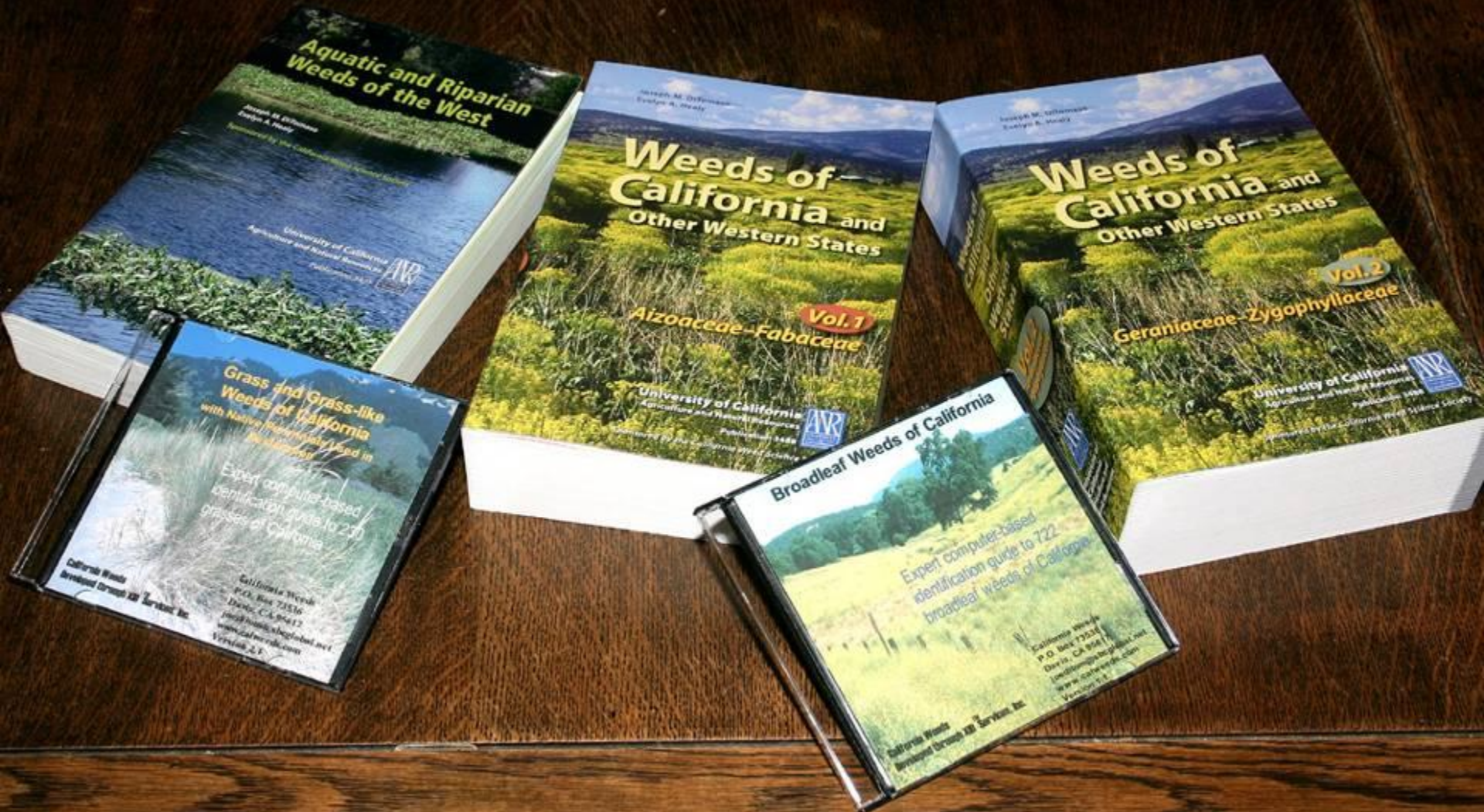
Scotch broom

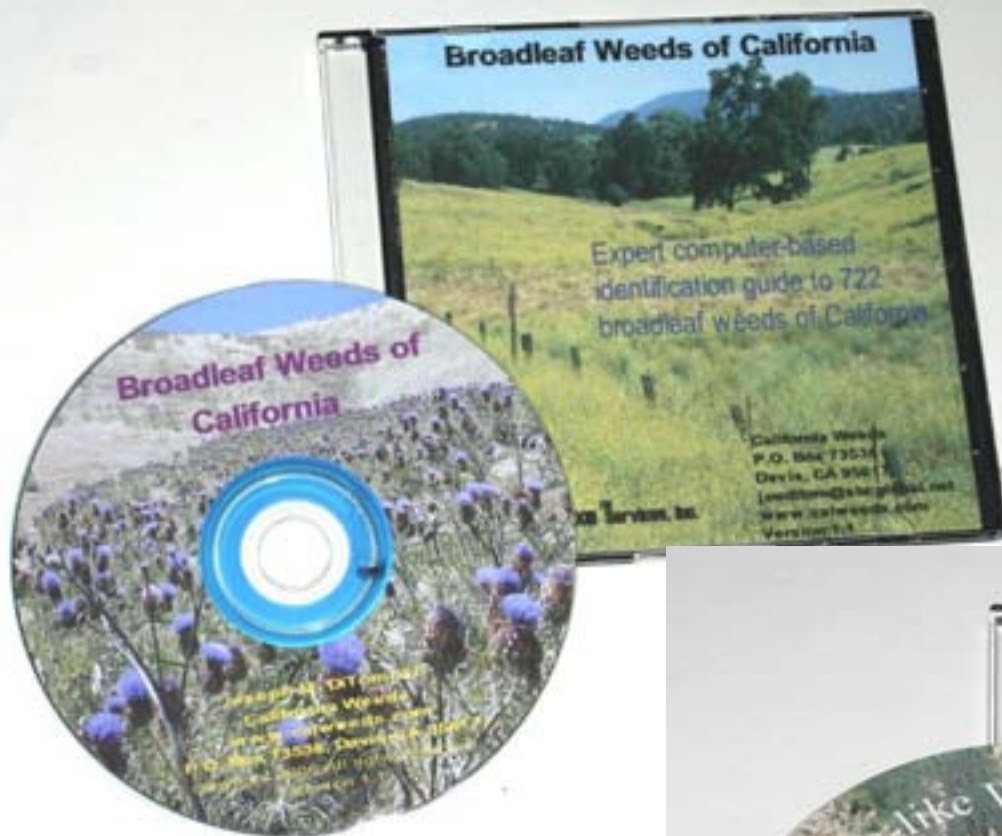


Topics to cover

- Yellow starthistle management
 - Biocontrol with new rust
- Saltcedar biocontrol
- Dalmatian toadflax control
- Yellow flag iris control
- Weed Research and Information Center weed ID program

calweeds.com







Weed Identification & Management

[Admin Home](#)

[Weed Tools](#)

[User Tools](#)

[User Comments](#)

[Logout](#)

Weed Tools

Below is a list of the weeds currently in the database. If you wish to create a new weed, [click here](#). If you wish to update an existing weed, click the "Update" link next to the weed. If you wish to delete a weed, click the "Delete" link next to that weed; you will be prompted to make sure you really want to delete said weed.

Click on a letter to filter the weeds results.

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Scientific Name	Common Name	Update	Images	States	Delete
Abutilon theophrasti	velvetleaf	Update	Images	States	Delete
Acacia baileyana	cootamundra wattle	Update	Images	States	Delete
Acacia dealbata	silver wattle	Update	Images	States	Delete
Acacia decurrens	green wattle	Update	Images	States	Delete
Acacia farnesiana	sweet acacia, huisache	Update	Images	States	Delete
Acacia greggii	catclaw acacia	Update	Images	States	Delete
Acacia longifolia	Sydney golden wattle	Update	Images	States	Delete
Acacia mearnsii	black wattle	Update	Images	States	Delete
Acacia melanoxylon	black acacia	Update	Images	States	Delete
Acacia paradoxa	kangaroothorn	Update	Images	States	Delete
Acacia retinoides	everblooming acacia	Update	Images	States	Delete



Weed Identification & Management

[Admin Home](#)[Weed Tools](#)[User Tools](#)[User Comments](#)[Logout](#)

Weed Tools - States Tool

Below is a list of the states currently associated with **Abutilon theophrasti**.

- | | | |
|--|---|---|
| <input type="checkbox"/> Alabama | <input type="checkbox"/> Kentucky | <input type="checkbox"/> North Dakota |
| <input type="checkbox"/> Alaska | <input type="checkbox"/> Louisiana | <input type="checkbox"/> Ohio |
| <input type="checkbox"/> Arizona | <input type="checkbox"/> Maine | <input type="checkbox"/> Oklahoma |
| <input type="checkbox"/> Arkansas | <input type="checkbox"/> Maryland | <input type="checkbox"/> Oregon |
| <input checked="" type="checkbox"/> California | <input type="checkbox"/> Massachusetts | <input type="checkbox"/> Pennsylvania |
| <input type="checkbox"/> Colorado | <input type="checkbox"/> Michigan | <input type="checkbox"/> Rhode Island |
| <input type="checkbox"/> Connecticut | <input type="checkbox"/> Minnesota | <input type="checkbox"/> South Carolina |
| <input type="checkbox"/> Delaware | <input type="checkbox"/> Mississippi | <input type="checkbox"/> South Dakota |
| <input type="checkbox"/> District Of Columbia | <input type="checkbox"/> Missouri | <input type="checkbox"/> Tennessee |
| <input type="checkbox"/> Florida | <input type="checkbox"/> Montana | <input type="checkbox"/> Texas |
| <input type="checkbox"/> Georgia | <input type="checkbox"/> Nebraska | <input type="checkbox"/> Utah |
| <input type="checkbox"/> Hawaii | <input type="checkbox"/> Nevada | <input type="checkbox"/> Vermont |
| <input type="checkbox"/> Idaho | <input type="checkbox"/> New Hampshire | <input type="checkbox"/> Virginia |
| <input type="checkbox"/> Illinois | <input type="checkbox"/> New Jersey | <input type="checkbox"/> Washington |
| <input type="checkbox"/> Indiana | <input type="checkbox"/> New Mexico | <input type="checkbox"/> West Virginia |
| <input type="checkbox"/> Iowa | <input type="checkbox"/> New York | <input checked="" type="checkbox"/> Wisconsin |
| <input type="checkbox"/> Kansas | <input type="checkbox"/> North Carolina | <input type="checkbox"/> Wyoming |



Weed Identification & Management

- [Admin Home](#)
- [Weed Tools](#)
- [User Tools](#)
- [User Comments](#)
- [Logout](#)

Broadleaf Characteristics

* required

scientific name

common name

URL

Where was the weed found?

agriculture field tree and small fruit crops field and forage crops
 vegetable crops cranberry fields

natural and grazed areas (non-crop) aquatic wetland/riparian
 forest/woodland pasture/CRP
 natural areas/prairies roadside/right of way/disturbed area

urban turf/lawns garden/landscape/parks

General Characteristics

habit upright prostrate
 creeping/viny creeping with upright tips

duration annual/biennial perennial

tendrils absent present

produces milky sap absent present

Leaf Characteristics

leaf type simple not lobed pinnately lobed
 palmately lobed

leaf type compound 2-3 leaflets greater than 3 leaflets
(pinnate)
 more than 3 leaflets (palmate) leaf
branched many times

leaf margin entire (not toothed) toothed to
lobed

petioles absent present

leaf hairs absent present

spines/thorns/prickles on
leaves absent present

leaf arrangement opposite alternate
 whorled basal

leaf venation parallel pinnate
 palmate

Stem Characteristics

stems square yes no

leaves on flowering stems yes no

leaves on flowering stems yes no

spines/thorns/prickles on stem absent present

Floral Characteristics

flower color pink-red yellow
 green orange
 blue-purple white-cream
 black-brown

flower symmetry radial bilateral

spines/thorns/prickles on
flowers/fruit absent present

update plant

reset form

File last updated: March 1, 2008

Feedback, questions or accessibility issues: mrenz@wisc.edu

© 2008 Board of Regents of the University of Wisconsin System



Weed Identification & Management

[Admin Home](#)

[Weed Tools](#)

[User Tools](#)





[User Comments](#)

[Logout](#)

Weed Tools - Images Tool

To view the full-size image, click the thumbnail image. To delete an image from the selected weed, click the "Delete" link next to said image. To add a new image, [click here](#).

The following images are associated with **Abutilon theophrasti**

Image	Delete
	<p data-bbox="1267 868 1356 893">Delete</p>
	<p data-bbox="1267 1188 1356 1213">Delete</p>
	<p data-bbox="1267 1348 1356 1373">Delete</p>
	



Weed Identification Tool

[Home](#)

[Weed ID Tool](#)

[Weed Selector Tool](#)

Weed Information - UC Davis

Welcome to University of California's Weeds Information website. Weeds are defined as undesirable plants or plants that oppose the management objectives of the land. This project conducts research and education activities designed to provide useful information to the public that is specific to weedy plants of the US, specifically California.

Weeds of Concern:

File last updated: November 5, 2008

Feedback, questions or accessibility issues: jmditomaso@ucdavis.edu

Copyright © The Regents of the University of California, Davis campus, 2005-08. All Rights Reserved.



Weed Research & Information Center

Weed Identification Tool

[Home](#)
[Weed ID Tool](#)
[Weed Selector Tool](#)

Weed Identification Tool

Search location:

Step 1: Select the type of weed you are trying to identify. You may change your choice of weed type, or restart the ID process at any time.

broadleaf	▼	go to step 2
select weed type		
broadleaf		
grasslike		
woody		

BROADLEAF:

These herbaceous (non-woody) plants typically produce noticeable flowers. Leaves are often broad with netted veins, but they may also be narrow and veinless.

GRASSLIKE:

These herbaceous (non-woody) plants lack noticeable flowers. The leaves are ribbon-like with parallel veins, and are often tightly rolled.

WOODY:

Trees, shrubs, and sub-shrubs with obvious woody stems that persist year after year.

File last updated: November 5, 2008

Feedback, questions or accessibility issues: jmditomaso@ucdavis.edu

Copyright © The Regents of the University of California, Davis campus, 2005-08. All Rights Reserved.



Weed Identification Tool

[Home](#)[Weed ID Tool](#)[Weed Selector Tool](#)

Weed Identification Tool

Search location:

Step 1: Select the type of weed you are trying to identify. You may change your choice of weed type, or restart the ID process at any time.

BROADLEAF:

These herbaceous (non-woody) plants typically produce noticeable flowers. Leaves are often broad with netted veins, but they may also be narrow and veinless.

GRASSLIKE:

These herbaceous (non-woody) plants lack noticeable flowers. The leaves are ribbon-like with parallel veins, and are often tightly rolled.

WOODY:

Trees, shrubs, and sub-shrubs with obvious woody stems that persist year after year.

Step 2: Begin your search by answering just a few questions you are confident are correct and are distinct for this weed. If your selections result in too many plants, continue to answer additional questions to narrow the number of results.

WARNING: Avoid answering too many questions as one incorrect answer can eliminate your desired weed from the results. Therefore, it is better to answer FEWER questions that are UNIQUE to your weed (such as if your weed has spines, thorns, or prickles).

You may change your answers and re-search the database as many times as you like. A list of weed species and pictures that match your entered characteristics will be provided when the answers are submitted. Leaving all questions unanswered will return all species of the chosen weed type contained in the database.

Where was the weed found?

Agriculture field:

field and forage crops ▾

natural and grazed areas (non-crop):

no selection ▾

Urban:

no selection ▾

General characteristics

Growth Form:

upright ▾ ?

Life Cycle:

annual/biennial ▾

Tendrils:

absent ▾

Produces milky sap:

absent ▾ ?

Leaf characteristics

Leaf arrangement:

alternate ▾

If leaf is simple:

not lobed ▾ ?

If leaf is compound:

no selection ▾ ?

Leaf margin:

entire (not toothed) ▾ ?

Petioles:

present ▾ ?

Leaf hairs:

present ▾

Spines/thorns/prickles:

absent ▾

Leaf venation:

palmate ▾

Stem characteristics

Stems square:

no ▾ ?

Leaves on flowering stems:

yes ▾ ?

Spines/thorns/prickles:

absent ▾

Floral characteristics

Flower color:

yellow ▾

Flower symmetry:

radial ▾ ?

Spines/thorns/prickles:

no selection ▾

search database

Produces milky sap:

no selection

Milky sap



Leaf characteristics

Leaf arrangement:

no selection

If leaf is simple:

no selection

Not lobed

Palmately lobed

Pinnately lobed



C022-14

C022-08

If leaf is compound:

no selection

Leaf margin:

no selection

Petioles:

no selection

Absent





Present



Leaf hairs:

no selection

Your database search has yielded 2 possible matches found in (CA)

Scientific Name	Common Name	Pictures
Abutilon theophrasti	velvetleaf	
Chenopodium album var. missouriense	Missouri goosefoot	




Were you able to identify the weed correctly?

Yes No

Were these results helpful? Comments/Questions?

Submit

Your database search has yielded 2 possible matches found in (CA)

Scientific Name	Common Name	Pictures
Ab...		
Ch...	mis	 

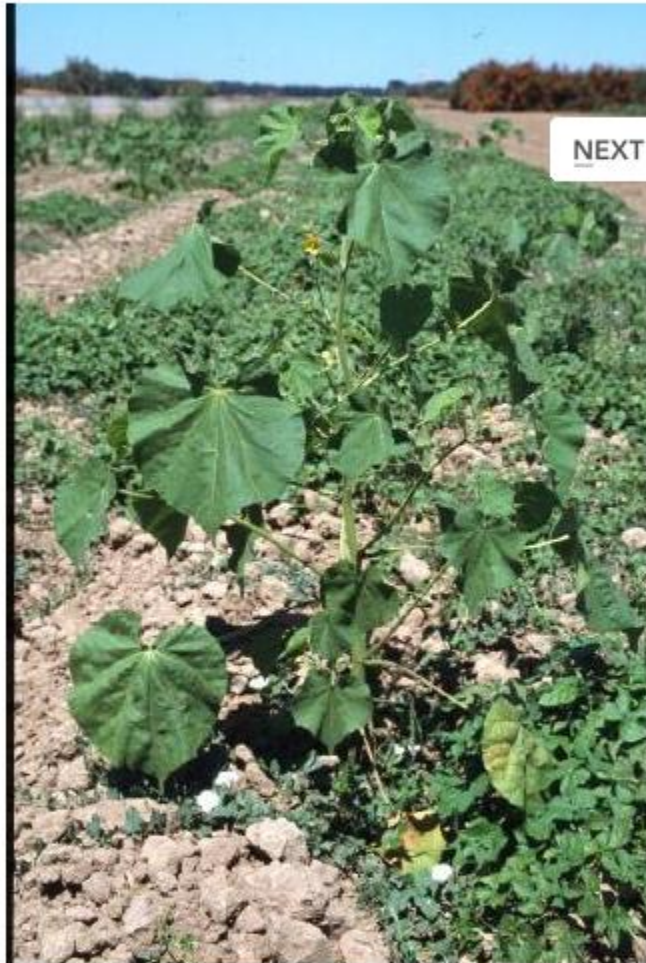


Image 1 of 4



Were these results helpful? Comments/Questions?

Where was the weed found?

Agriculture field:

no selection 

natural and grazed areas (non-crop):

no selection 

Urban:


turf/lawns 

General characteristics

Growth form:

prostrate  ?

Life cycle:


annual/biennial 

Vegetative characteristics

Plant hairs:

entire plant hairy  ?

Fused sheath:

no selection  ?

Ligules:

membranous  ?

Ligule length:

no selection 

Auricles:

absent  ?

Seedhead/Inflorescence characteristics

Seed head branching:

multiple spikes on a single stalk  ?

Seed head awns:

absent  ?

search database

General characteristics

Growth form:

prostrate

Life cycle:

annual/biennial

Vegetative characteristics

Plant hairs:

entire plant hairy

Absent



Collar hairy



Sheath hairy



Blade hairy



Seedheads hairy



Fused sheath:

no selection

Ligules:

membranous

Ligule length:

no selection

Auricles:


absent

Seedhead/Inflorescence characteristics

Seed head branching:

multiple spikes on a single stalk

Your database search has yielded 1 possible matches found in (CA)

Scientific Name	Common Name	Pictures
Digitaria sanguinalis	hairy crabgrass large crabgrass	

Were you able to identify the weed correctly?

Yes No

Were these results helpful? Comments/Questions?

Submit

File last updated: November 5, 2008

Feedback, questions or accessibility issues: jmditomaso@ucdavis.edu

Copyright © The Regents of the University of California, Davis campus, 2005-08. All Rights Reserved.



Weed Identification Tool

[Home](#)[Weed ID Tool](#)[Weed Selector Tool](#)**Weed Identification Tool**

Search location:

California 

Step 1: Select the type of weed you are trying to identify. You may change your choice of weed type, or restart the ID process at any time.

woody [go to step 2](#)[restart ID process](#)**BROADLEAF:**

These herbaceous (non-woody) plants typically produce noticeable flowers. Leaves are often broad with netted veins, but they may also be narrow and veinless.

GRASSLIKE:

These herbaceous (non-woody) plants lack noticeable flowers. The leaves are ribbon-like with parallel veins, and are often tightly rolled.

WOODY:

Trees, shrubs, and sub-shrubs with obvious woody stems that persist year after year.

Step 2: Begin your search by answering just a few questions you are confident are correct and are distinct for this weed. If your selections result in too many plants, continue to answer additional questions to narrow the number of results.

WARNING: Avoid answering too many questions as one incorrect answer can eliminate your desired weed from the results. Therefore, it is better to answer FEWER questions that are UNIQUE to your weed (such as if your weed has spines, thorns, or prickles).

Where was the weed found?

Agriculture field:

no selection

natural and grazed areas (non-crop):

no selection

Urban:

no selection

General characteristics

Growth form:

no selection

**Upright with
Single trunk/stem**



**Upright with
multiple trunks/stems**



Creeping/Viny



Life cycle:

no selection

Tendrils:

no selection

Produces milky sap:

no selection

Leaf characteristics

Leaf arrangement:

no selection

If leaf is simple:

no selection

If leaf is compound:

no selection

Leaf margin:

no selection

Petioles:

no selection

Leaf hairs:

no selection

Where was the weed found?

Agriculture field:

no selection

natural and grazed areas (non-crop):

wetland/riparian

Urban:

no selection

General characteristics

Growth form:

upright with single trunk/stem ?

Life cycle:

no selection

Tendrils:

no selection

Produces milky sap:

absent ?

Leaf characteristics

Leaf arrangement:

alternate

If leaf is simple:

not lobed ?

If leaf is compound:

no selection ?

Leaf margin:

entire (not toothed) ?

Petioles:

present ?

Leaf hairs:

absent

Spines/thorns/prickles:

absent

Leaf venation:

no selection

Stem characteristics

Stems square:

no selection ?

Leaves on flowering stems:

no selection ?

Spines/thorns/prickles:

no selection

Floral characteristics

Flower color:

no selection

Flower symmetry:


no selection ?

Spines/thorns/prickles:

no selection

search database

Your database search has yielded 1 possible matches found in (CA)

Scientific Name	Common Name	Pictures
Nicotiana glauca	tree tobacco	

Were you able to identify the weed correctly?

Yes No

Were these results helpful? Comments/Questions?

Submit

File last updated: November 5, 2008

Feedback, questions or accessibility issues: jmditomaso@ucdavis.edu

Copyright © The Regents of the University of California, Davis campus, 2005-08. All Rights Reserved.

Topics to cover

- Yellow starthistle management
 - Biocontrol with new rust
- Saltcedar biocontrol
- Dalmatian toadflax control
- Yellow flag iris control
- Weed Research and Information Center weed ID program



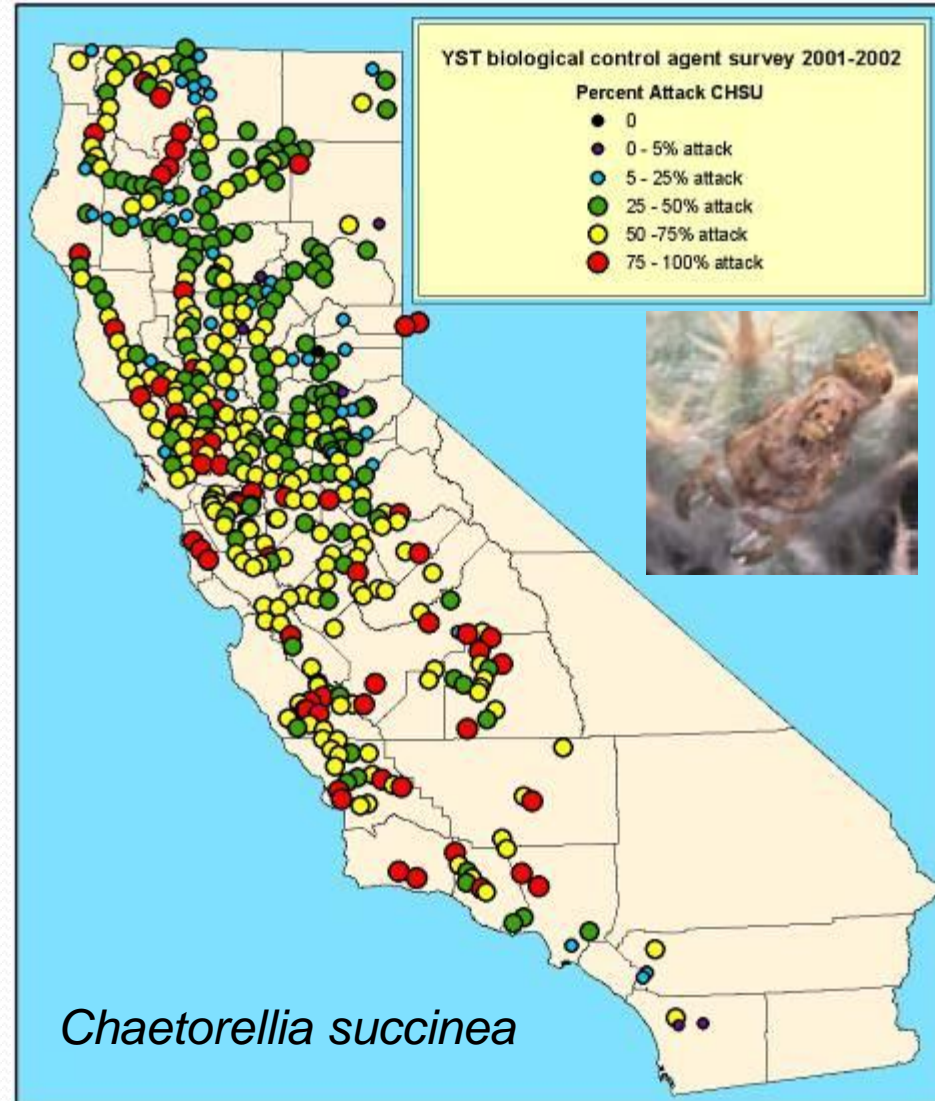
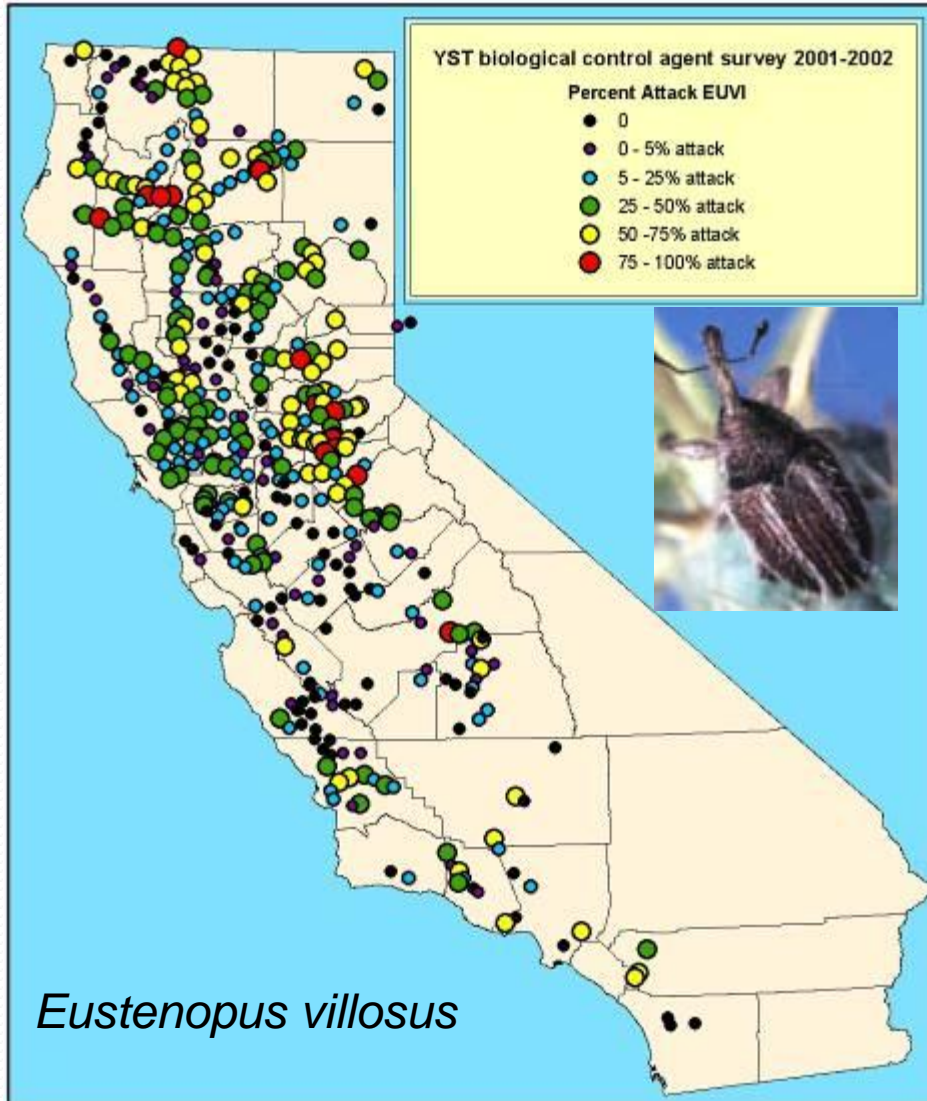
Hairy weevil
*Eustenopus
villosus*

UC Davis Weed Science Program
copyright Regents, University of California
Photo by Jack Kelly Clark

False
Peacock Fly
*Chaetorellia
succinea*



Biocontrol agent distribution and attack rates in California



The Rust Fungus

- *Puccinia jaceae*
var. *solstitialis*
- Found in Turkey;
Approved for
released by CDFA
in 2003
- Attacks vegetative
part of plant



Field Site



