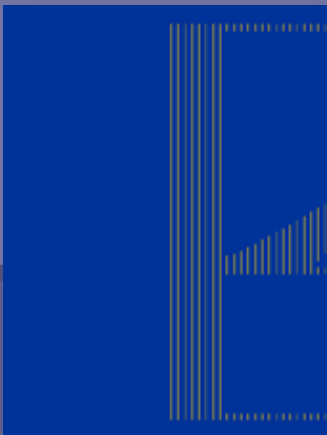


# Invasive Weeds: Biology, Impacts and Preventing the Spread



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# What makes a weed invasive?

- Highly aggressive
- Difficult to control
- Form monocultures



*Scotch broom taking over!*

# Invasive Weed Biology

- Seed production and viability
- Reproduce from parts
- “Tricks” to compete with other plants



# Damage and Impacts

- Decrease wildlife habitat
- Reduce recreational values and uses
- Decrease land productivity and value
- Contribute to soil erosion and lake/stream sedimentation
- Increased fuel loads and fire risks
- Harm human and animal health

# Damage and Impacts

- Expensive to control



# Degrade Wildlife Habitat

- Smothers native vegetation
- cover nesting areas and wildlife food
- Toxins in the leaves make it inedible to animals



# Loss of Recreation Access

Aquatic invasives can clog waterways

Yellow starthistle and Scotch broom block trails – hiking, horseback and bike trails



# Reduces Land Productivity

- Yellow starthistle
  - reduces forage quality and yield
- Nationwide, invasive plants in pastures and farmland cost an estimated \$33 billion per year
- Invasives can reduce forest regeneration



# Increasing Flooding

Giant reed

(*Arundo donax*)

clogs creeks  
throughout  
California

- Reduces creek capacity
- Increases risk of floods during winter storms



# Increase Soil Erosion

- Perennial pepperweed – roots do not hold soil well



# Increasing Fire Danger

- Increased fuels and fire frequency

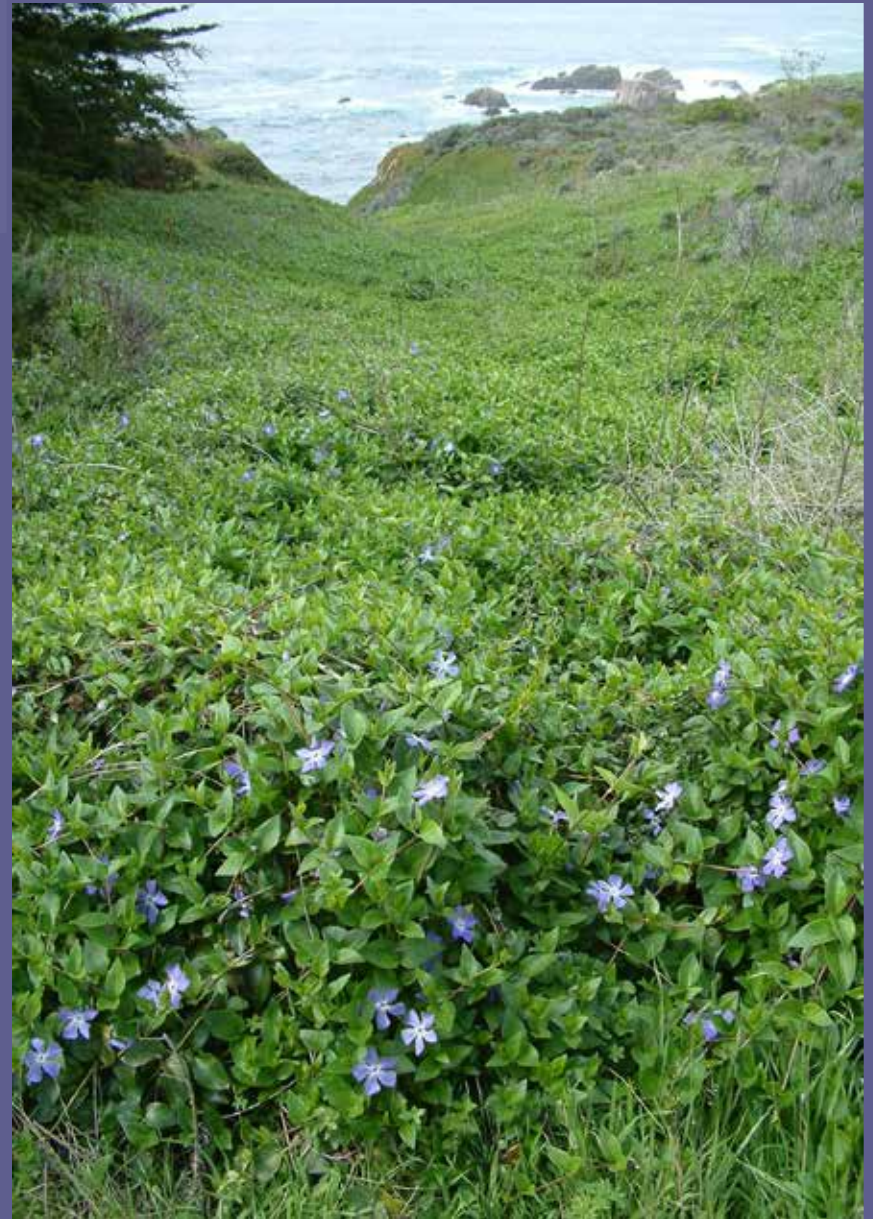


# Displace Native Plants

## n Periwinkle

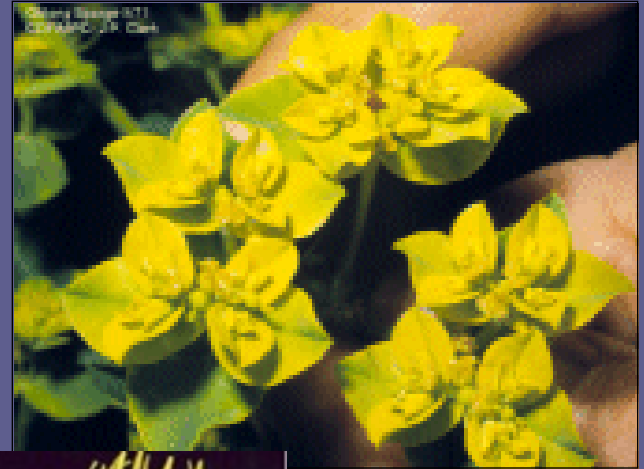
*(Vinca major)*

- Trailing stems that root easily
- Loves shade, moist areas – creeks and drainages



# Harm to Animal and Human Health

- Oblong spurge sap irritates skin
- Yellow starthistle can be poisonous to horses



# How Invasive Weeds are Spread

- Animals and birds
- Humans – on boots, clothing, tires
- Wind and water
- Escaped ornamental plants
- Via equipment and materials used during site disturbing activities

# Animals and Birds

- On fur
- In droppings



# Moved by Humans

- Clothing
- Boots
- Tires/equipment
- Relocating plants



# Wind and Water

Sesbania seed pods can float in streams for 10 days



# Escaped Ornamentals



# On Equipment and in Materials



# Prevention is the key!

- Protect agriculture
- Protect recreational areas
- Protect land values
- Protect wildlife habitat and plant diversity
- Decrease threats from fire

# Prevention Guidelines and Best Practices



# Site-Disturbing Projects

- Landscaping
- Road installation or upgrades
- Fire prevention
  - Fuels reduction
  - Fire breaks
  - Defensible space
- Building



# Site-Disturbing Projects

Why be concerned?

- Disturbed seed bank
- Bare ground – invasives love open areas
- Seeds/plant parts moved by equipment

**PREVENTION** is the most economical  
"treatment" of invasive weeds!

# Prevention Guidelines

- Learn which plants are invasive in your area
- Identify and eradicate weeds prior to project start



# Prevention Guidelines

- Locate and use weed-free equipment – is it cleaned?
- Start in non-infested area and then move to infested areas



# Prevention Guidelines

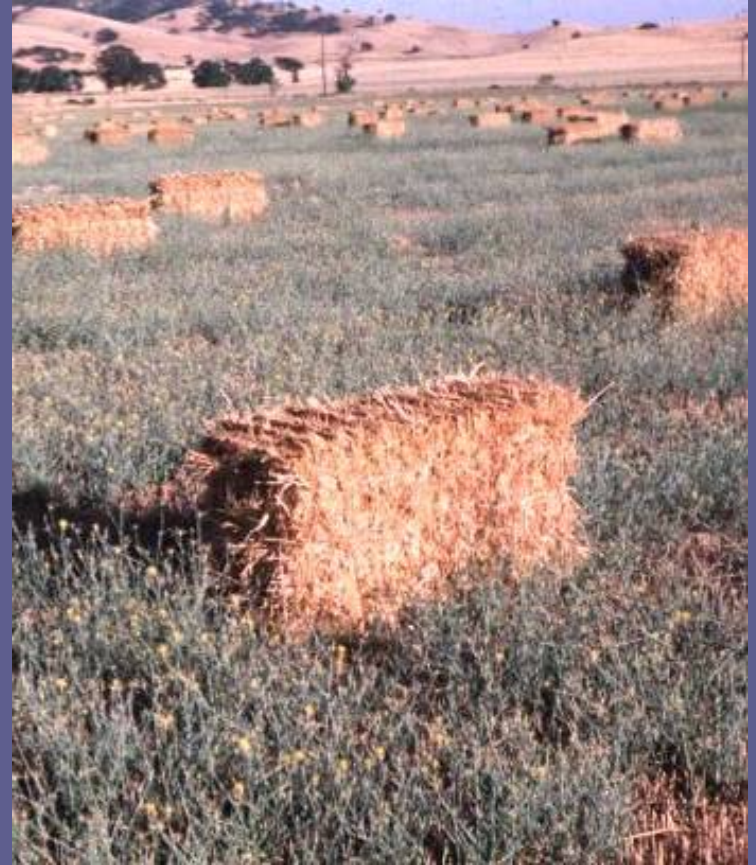
- All equipment should be cleaned BEFORE entering the site; remove all mud, dirt and plant parts



*Diffuse knapweed at a storage yard*

# Prevention Guidelines

- Use weed-free materials - fill, gravel, sand, mulch, straw, etc.
- Consider chipping local brush for mulch – seed may help restore vegetation



*Yellow starthistle infested bales*

# Prevention Guidelines

- n Re-establish vegetation with local weed-free seed mixes
- n Mulch to "shade out" invasive weeds and prevent seed germination



*Revegetation of a site at Lake Tahoe*

# Prevention Guidelines

Inspect the area for at least three growing seasons after completion of the work



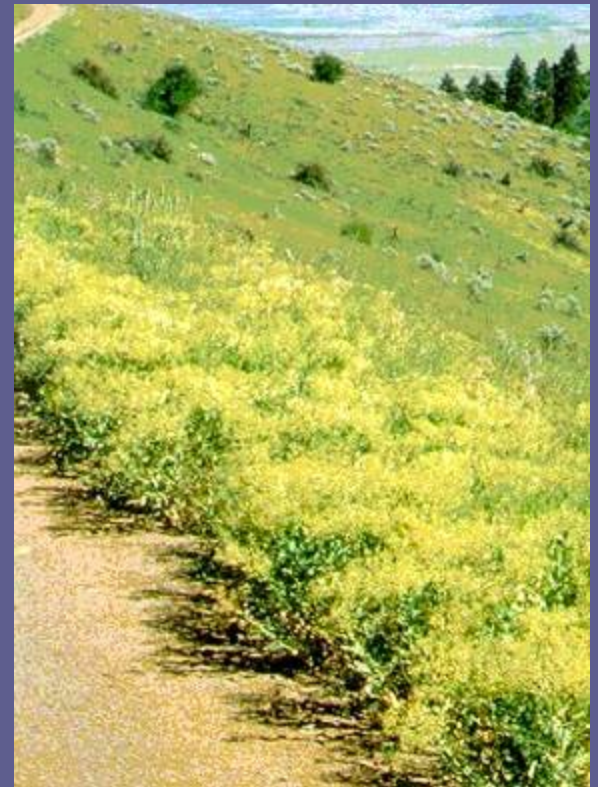
*Perennial pepperweed*



*Dalmatian toadflax*

# Prevention Guidelines

New weed infestations  
should be identified  
controlled immediately!



*Hoary cress moving into  
wildlands from a road*

## A Builder and Contractor's Guide to Preventing the Introduction and Spread of Invasive Weeds

### What Every Construction, Utility & Landscaping Professional Needs to Know About Invasive Plants



Hoary cress  
(above) and  
Oblong spurge  
(right).



Invasive weeds are damaging our parks, farmland, forests and natural areas. Contractors, landscapers, builders, and road and utility management and crews can play a critical role in stopping their introduction and spread.

The most effective, economical, and ecologically sound method of managing invasive plants is to prevent their invasion in the first place. Too often, landowners and land managers pour resources into fighting weeds after they are firmly established. In such cases, control is extremely expensive and eradication is often no longer feasible. Resources

can be spent more efficiently on proactive weed management activities that focus on prevention of new invasions.

Invasive weed seeds and root fragments can be moved to a construction site on equipment or tires, in gravel or fill materials, or in erosion control materials and mulch. Seeds or root fragments can then reproduce, especially in disturbed areas which favor invasive weed development. The best defenses against invasive weeds are prevention of introductions and early detection and eradication, before new infestations get established.

### Understanding the Problem...

Invasive plants, otherwise known as invasive weeds, are a serious problem in California and the United States, causing billions of dollars in damages annually to agricultural, forestry, recreational and tourist industries. Invasive weeds are characteristically non-native, adaptable, aggressive plants that have a high reproductive capacity. Plants like yellow starthistle, spotted knapweed, Scotch broom and tree-of-heaven are crowding out native plants

and reducing the productivity of range and farmlands. Invasive weeds change the structure of soil, alter water flows and conditions, reduce the food and shelter available for wildlife, reduce forest regeneration, change fire regimes and disrupt recreational experiences. Human and animal health can also be harmed by invasive plants.

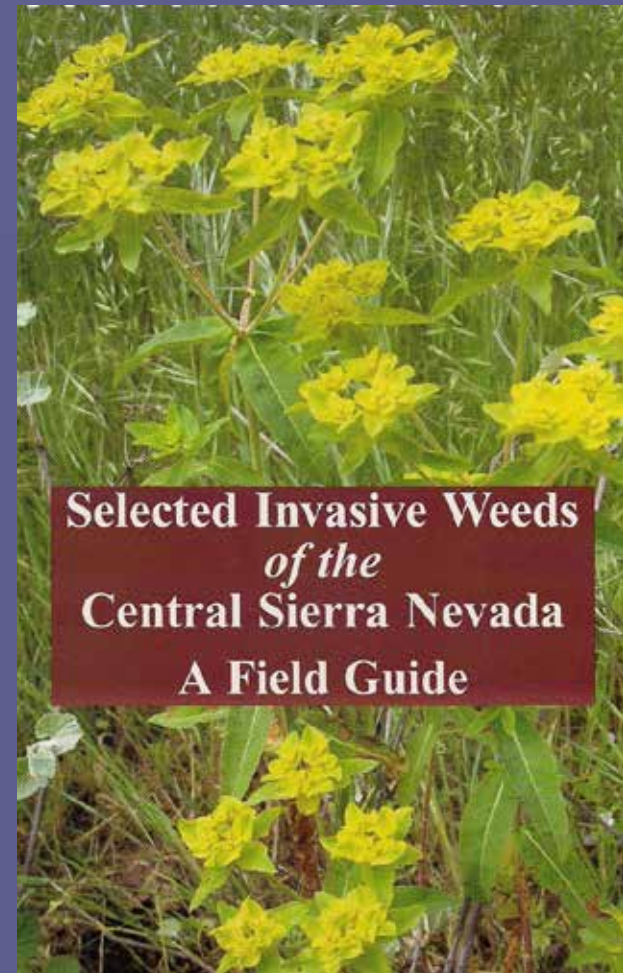
Thousands of plant species have been brought to North America in the past three centuries. Most are well-behaved, rarely invading

natural and agricultural areas. A few, however, do not have the natural enemies from their native

homelands to keep them in check, allowing them to out-compete our native plants and farm crops.

To prevent the introduction and establishment of invasive plants during construction and landscaping projects, a proactive plan should include:

- limiting the introduction of weed seeds and plant parts into an area;
- managing land to build and maintain healthy communities of native and desirable plants to compete with weeds;
- early detection and eradication of small patches of weeds; and
- evaluating annually the effectiveness of the prevention plan so appropriate steps can be taken the following year.



### Selected Invasive Weeds of the Central Sierra Nevada A Field Guide

## Resources

# Weed Free Forage and Straw Availability List

http://www.cal-ipc.org/ip/prevention/WFF\_Provider\_List\_2012.pdf

cal-ipc.org

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**Weed-Free Forage and Straw Providers - California**

June 2012 Update

Disclaimer: These suppliers provide certified weed free forage and straw that has been inspected and certified by local County Agricultural Commissioners. Please contact Wendy West 530.621.5533 or wkwest@ucdavis.edu, if omissions are noted.

CALIFORNIA (Alphabetized by County)

Alameda	Phone	Street	City	Product
Bay Area Hay & Feed	925-389-6005	101 N. Greenville Rd	Livermore, 94550	alfalfa cubes/pellets
EJ Cattle & Feed Supply	925-960-9074	7900.Cameal Rd	Livermore, 94551	alfalfa cubes/pellets
Livermore Feed & Farm	925-447-4203	3170 Fourth St	Livermore, 94550	alfalfa cubes/pellets
Rancher's Outlet	209-245-6631	6980 Hwy 16	Plymouth, 95669	alfalfa cubes/pellets
Western Saddlery	800-833-5085	7038 Commerce Cir	Pleasanton, 94588	alfalfa cubes/pellets
<b>Amador</b>				
Feed Barn	209-223-2809	11261 Prospect Dr	Jackson, 95642	alfalfa cubes/pellets
<b>Butte</b>				
Big D's Hay & Feed Barn	530-534-9026	42 She-Yo Ln	Oroville, 95966	alfalfa cubes/pellets
Kumbak Ranch Feed	530-679-1011	5690 La Porte Rd	Bangor, 95914	alfalfa cubes/pellets
Northern Star Mills	530-342-7661	510 Esplanade	Clacto, 95926	alfalfa cubes/pellets
Skyview Feed & Pet	530-877-1019	677 Birch St	Paradise, 95969	alfalfa cubes/pellets
<b>Calaveras</b>				
Country Feed & More	209-754-9100	833 G Hwy 49	San Andreas, 95249	alfalfa cubes/pellets
McDillard's Feed	209-785-8000	3566 Spangler Ln #1	Copperopolis, 95228	alfalfa cubes/pellets
Spence Ranch Feed & Supply	209-736-4310	1291 N Hwy 49	Altaville, 95221	alfalfa cubes/pellets
Valley Springs Feed	209-772-3589	10 Main St	Valley Springs, 95252	alfalfa cubes/pellets

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California Invasive Plant Council , via the "Prevention" section at:  
[http://www.cal-ipc.org/ip/prevention/WFF\\_Provider\\_List\\_2012.pdf](http://www.cal-ipc.org/ip/prevention/WFF_Provider_List_2012.pdf)

# Questions?



# Thank you!

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