A photograph of a person wearing a white long-sleeved shirt, blue gloves, and a backpack sprayer, standing in a dense thicket of green weeds. The person is facing away from the camera, spraying the vegetation. The background shows a forest with large trees and a stream. The text is overlaid on the image in a yellow, bold font.

# Threats to the Web

Introduction to Noxious Weeds  
for Streamkeepers of Clallam County

Cathy Lucero-Clallam County Noxious Weed Control Program  
April 2012

# What is an Ecosystem?

“Communities of different kinds of living creatures interacting with one another and with their non-living environment.”

## Why do we care?

- Depending on the present system
- Planning requires predictability
- Environmental checks and balances
- Importance of biodiversity



# Topics

- Describe plant interaction with land AND water
- Define noxious weeds, describe impacts
- Introduce Washington State response
- Give 12 Noxious examples
- Review field sheets and protocol
- Give an assignment for field training
- Summarize impacts to different environments
- Give tips that anyone can use

# Plants and Streams

- Shade water
- Add nutrients
- Filter pollutants
- Influence structure
- Deflect energy
- Bank stabilization
- Habitat diversity

Shade, nutrients



A wide river flows through a dense forest. The left bank is composed of light-colored rocks and pebbles. The foreground is filled with tall, green grasses and some yellow wildflowers. The background shows a thick forest of green trees under a cloudy sky.

Bank stability, colonization

Channel  
formation (large  
woody debris)



Large woody debris protecting an eroding bank



# Goal of Streamkeepers Weed Training:

- *To train volunteers to help detect and monitor infestations, thus preventing or slowing the establishment of noxious weeds in sensitive areas such as riparian and aquatic environments.*

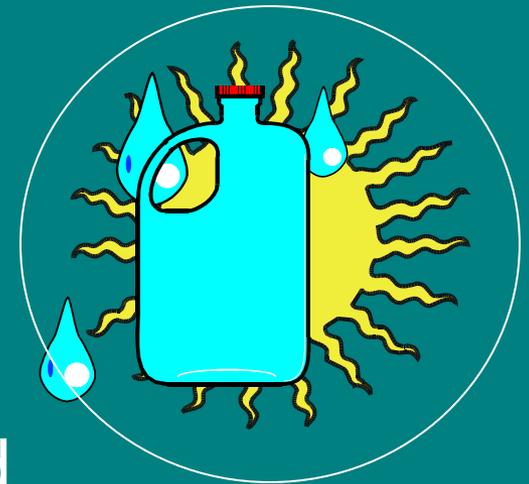
# What's wrong with weeds?

WEED = Plant out of Place

*Compete for light, water, nutrients, space*

## Noxious Weeds are Masters of Competition

- Non-native
- Aggressive
- Difficult to Control Once Established
- Cause Economic or Environmental Damage
- Problem that won't go away/Increases with time
- Listed by State Weed Board



# What's wrong with noxious weeds?

## Numerous Impacts

- Destroy wildlife habitat
- Pose hazard to humans and animals
- Lower land values
- Reduce crop value or production
- Cause flooding
- Reduce recreational uses
- *Can significantly alter ecological functions*



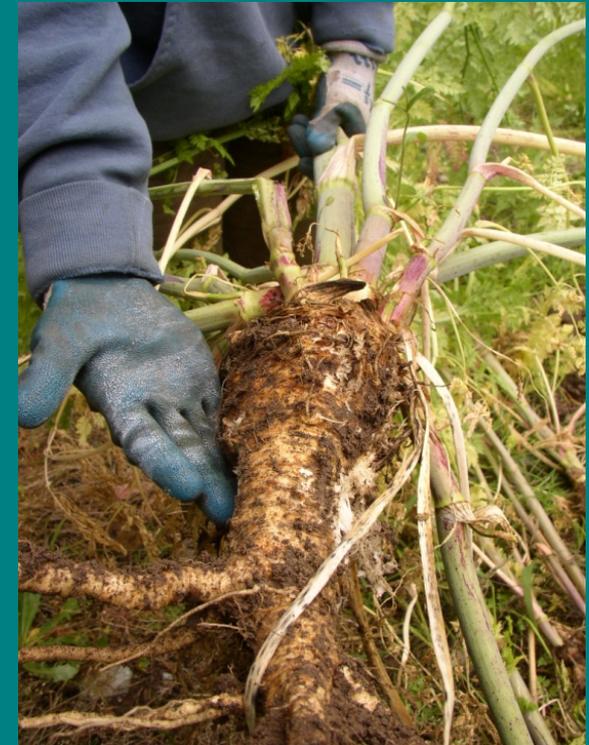
Poison  
hemlock

# Poison Hemlock

*Conium maculatum*)



- Carrot Family
- Biennial
- **Smooth, purple spotted stem**
- **VERY**  
**POISONOUS**





# Hemlock Look-a-Likes



Wild carrot



Bur chervil



Water parsley



Western Water hemlock

# What does Washington State do about noxious weeds?

## Federal Noxious Weed Law

- Aimed at preventing invasive exotic introductions
- Meet or match local programs



Scotch broom

## State Noxious Weed Law

- Kill 'em when they're young!
- Prioritized weed list-revised annually

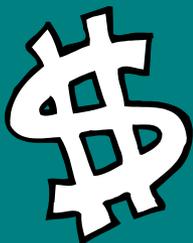
## County Weed Boards

- Local control
- Broad enforcement powers

# What's the big deal?



- US Forest Service calls noxious weeds second leading cause of species endangerment
- The BLM estimates 4,600 acres of wildlife habitat taken over every day by non-native plants
- Creates the perfect environment for additional non-native species

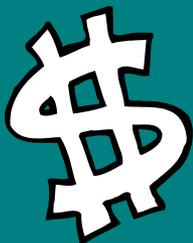


# What's the big deal?



## Plain Economics

- **Knapweed** infestations in **Montana** rangeland and wildland cost about **\$42 million annually**.
- **Leafy spurge** in Montana, North Dakota, South Dakota & Wyoming costs **\$129.5 million annually** and represents a **loss of 1,433 jobs**
- Just **22 of Oregon's 99 noxious weeds** annually cost **\$83 million in lost production, equivalent to 3,329 jobs**.
- Weeds have an estimated cost to the nation's farmers, water quality and recreational areas of **\$34.7 billion annually**.—*Cornell University Study*



# Water Weeds

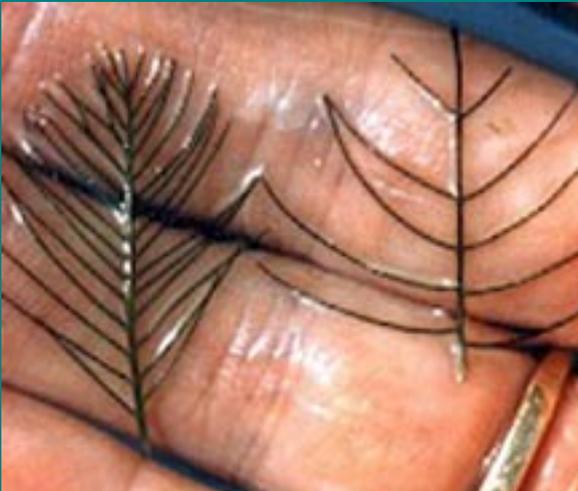
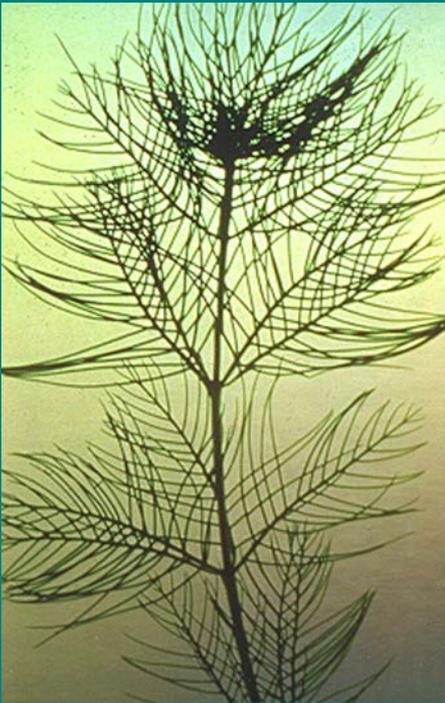
- Typically submergent vegetation, except during reproduction
- Live in shallow streams, slow moving water, ponds and lakes,
- Some tolerate salinity
- Most aquarium escapees

## Impacts

- Rapid growth, monocultures
- Alter water quality
- Degrade habitat
- Clog waterways and pipe intakes
- Siltation and flooding
- Affect water storage capacity
- Recreation-boating, fishing, swimming
- \$\$\$\$\$\$\$

# Eurasian Watermilfoil

(*Myriophyllum spicatum*)



Native-Northern milfoil (*Myriophyllum sibiricum*) on Rt.

# Parrot Feather

*(Myriophyllum aquaticum)*



# Land Weeds

- **Land weeds**
- 1/2 ornamental introductions, others contaminants
- Aggressive and competitive
- Most thrive in moist environment
- Some are poisonous
- Most unpalatable
- **Impacts**
- Rapid growth, monocultures
- Prevent establishment of beneficial plants
- Degrade or threaten habitat
- Clog waterways and pipe intakes
- Siltation and flooding
- Decrease pasture or meadow productivity
- \$\$\$\$\$\$\$

# Poster Child: Invasive Knotweeds

*(Polygonum.spp)*



- Bamboo-like hollow stems
- Spikes of white flowers
- Extensive roots!



- 4 species

Japanese

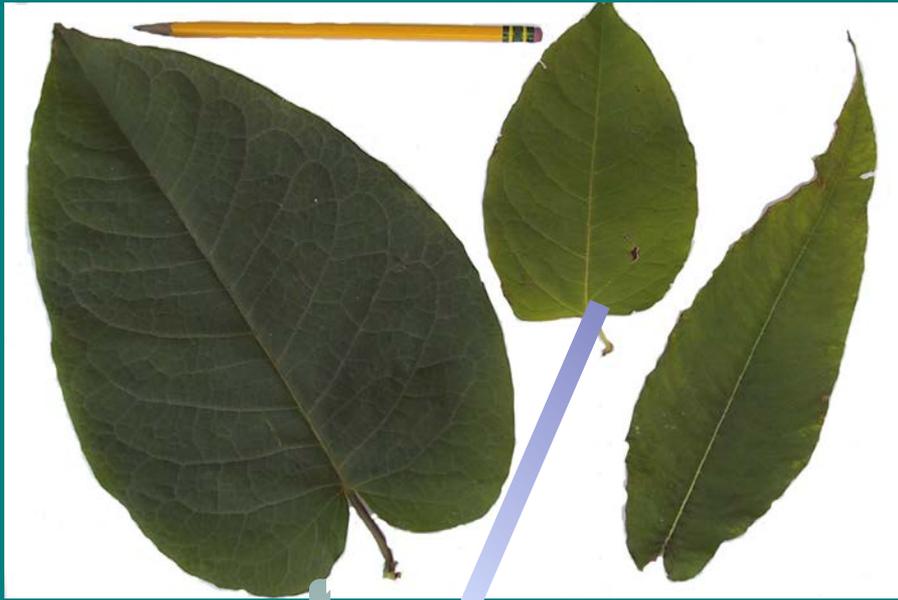


Giant



Himalayan





Giant

Japanese

Bohemian (a hybrid)



# Knotweed on the Dickey River





# Knotweed Beaver Dam





Knotweed can  
grow from stem  
fragments

Or from  
tiny root  
fragments-  
as small  
as 1/2 in.

WEED  
ROL

3/28/06  
5:30 pm

3/29/06  
4:28 pm

3/29/06  
10:00 AM

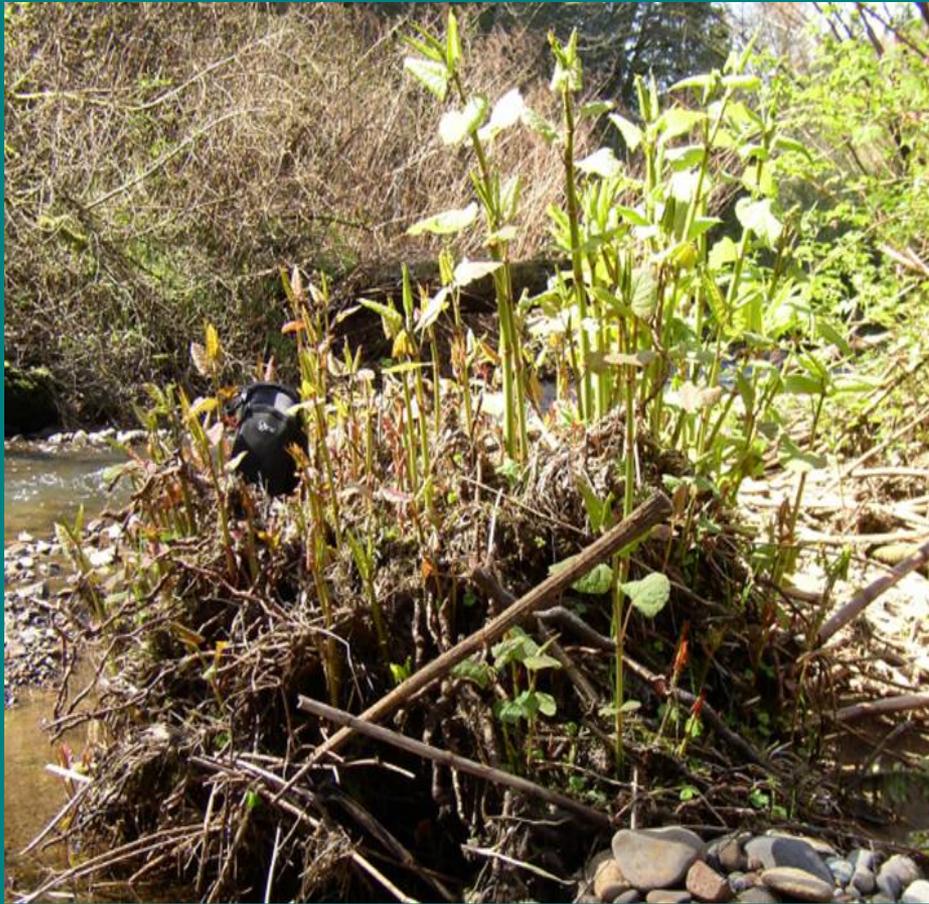
3/30/06  
7:58 am

3/31 6:50 am

3/31  
10:15 AM

3/25/06  
10:00 AM





Root mass



12 days later





Knotweed roots do  
not stabilize banks





# Knotweeds can cause severe property damage







4/9: a few pioneer plants—small, bright green



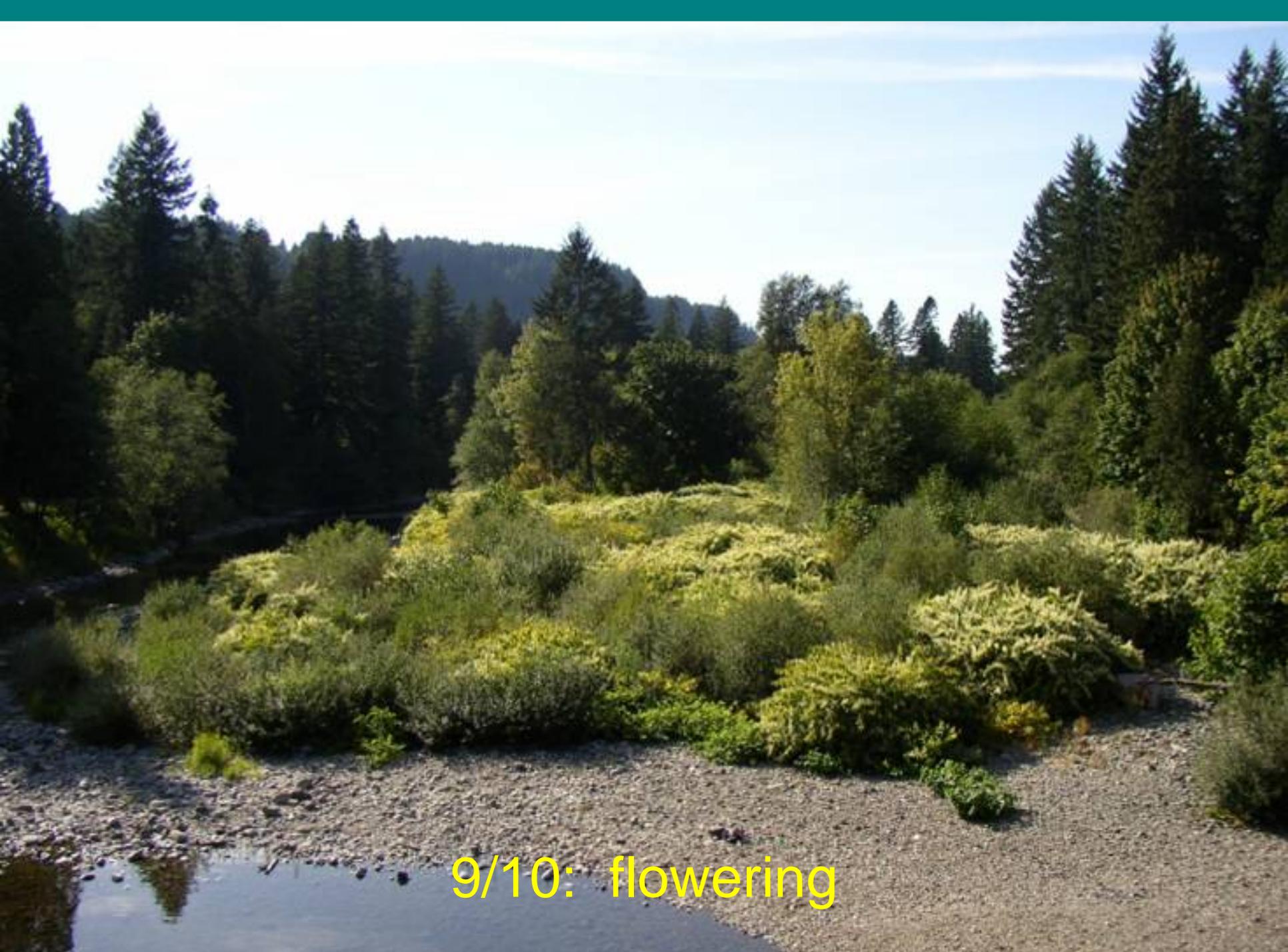
4/29: scattering of plants are bushing out



5/21: bright green bushes flourishing



8/5: crowding out other plants



9/10: flowering



10/10: knotweed (red) now dominates



Knotweed forest pre-treatment

20 10:31 AM



Post-treatment

20 10:00 AM



Understory recovery post-treatment

2005 5 17

# Refining knotweed control methods



# Butterfly Bush

(*Buddleia davidii*)

- Long flower spike
- Opposite leaves
- Wind dispersed seeds
- Poor habitat for caterpillars, other insects



# Garlic Mustard

(*Alliaria petiolata*)

- Mustard family-biennial
- Small 4 petaled white flowers
- S or L shape root
- Shade or sun
- Allelopathic
- Looks like money plant or native piggy-back plant
- Garlic odor



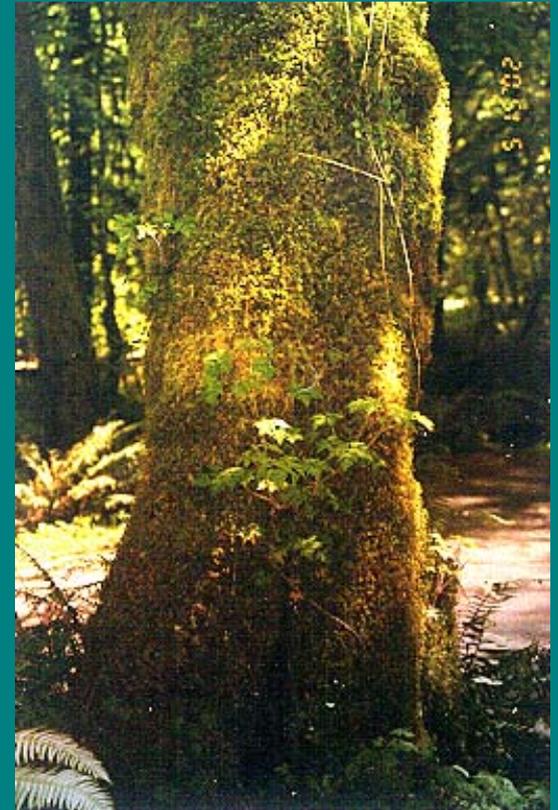


# Herb Robert aka “Stinky Bob”



*(Geranium  
robertianum)*

- 5 petaled pink flower
- Hairy stem
- Leaves smell





# Peabody Creek



Look-alike!

# Bleeding Heart (native)

*vs. Herb Robert*





# Reed Canarygrass

*(Phalaris arundinacea)*

- Large cellophane ligule

## Matriotti Creek



BEFORE TREATMENT



AFTER TREATMENT

What's new?

# Common reed

*(Phragmites australis)*

- Looks like giant reed canary grass
- Pampas grass-like seed head



# Yellow Archangel

■ (*Lamiaeum galeobdolon*)

- Mint family
- Perennial-creeping vine
- Yellow tubular flowers growing in paired clusters near the stem
- Silver/green variegated leaves
- Spreads by seed, clippings and stem nodes





**STREAMKEEPERS OF CLALLAM COUNTY -- NOXIOUS WEED REPORT (REV. 6/2012)**

(Perform every summer and when new data are noted; see Volunteer Handbook for details.)

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Chief observer (full Initials + last name): \_\_\_\_\_

Site Name: \_\_\_\_\_ Location: \_\_\_\_\_  
 (Please include a verbal description that the Weeds office will understand.)

Property Ownership (circle one):

- 0) Private 1) Clallam County 2) DOT 3) Sequim 4) P.A. 5) Forks  
 6) PUD 7) DNR 8) Olympic National Forest or Park 9) Other: \_\_\_\_\_

Extent of reach area surveyed: width (including stream): \_\_\_\_\_ length: \_\_\_\_\_ (feet)

Overall noxious weed cover: \_\_\_\_ 0-5% \_\_\_\_ 6-50% \_\_\_\_ 51-100%

Noxious Weeds Detected? \_\_\_\_ Yes \_\_\_\_ No (if yes, complete table below)

	INFESTATION ZONE AREA (ft.)		WEED COVER* WITHIN INFESTATION ZONE				
	Width	Length	(1) 1%-20%	(2) 21%-40%	(3) 41%-60%	(4) 61%-80%	(5) 80%-100%
<b>Key to control classes:</b> A & B+ : control is required by all landowners; B- : control required in specific locations B & C : control desirable but not required							
<b>Water Weeds</b>							
Brazilian elodea (B+)							
fanwort (B+)							
hydrilla (A)							
milfoil, Eurasian (B+)							
milfoil, parrotfeather (B+)							
watercress (non-listed, monitor list)*							
<b>Land Weeds</b>							
blackberry, Himalayan (C)							
butterfly bush (B)							
garlic mustard (A)							
giant hogweed (A)							
hairy willow herb (B+)							
herb Robert (B), (Bs in pits)							
hoary alyssum (B+)							
ivy (C)							
knotweeds (B)(Bs in pits + 4 rivers*)							
knapweed, diffuse/meadow/spotted (circle) (B+)							
orange hawkweed (B+)							
oxeye daisy (B)							
purple loosestrife (B+)							
phragmites (B+)							
poison hemlock (B+)							
police man's helmet (B+)							
reed canarygrass (C)							
Scotch broom (B-s, in pits only)							
smooth cordgrass (spartina) (B+)							
St. Johnswort (C)							
tansy ragwort (B-s, pits & E of Crescent)							
thistle, Canada bull (circle) (C)							
yellow archangel (B+)							
yellow-flag iris (C)							
Concerns: (spotted jewel weed, holly, laurel, teasel, bindweed, etc.)							

\*Weed cover class categories: Imagine drawing a dotted line encompassing the entire infestation zone of that weed species within your survey reach, and then bunching that species into one corner of that infestation zone.

- 1: If grouped together, the weed is present but covers less than 1/4 of its infestation zone
- 2: If grouped together, the weed covers more than 1/4, but less than 1/2 of its infestation zone
- 3: If grouped together, the weed covers about 1/2 of its infestation zone
- 4: If grouped together, the weed covers more than 1/2 to about 3/4 of its infestation zone
- 5: If grouped together, the weed covers more than 3/4 of its infestation zone

Comments: \_\_\_\_\_

# Data Sheet

**NEW:**

- Width/Length of reach surveyed
- Overall noxious weed cover:
  - 0-5% (protection area)
  - 6-50% (problem area)
  - 51-100% (hammered)
- Noxious weeds detected? (“No” is important data)

# Data Sheet, cont.

INFESTATION ZONE AREA (ft.)		WEED COVER* WITHIN INFESTATION ZONE				
Width	Length	(1) 1%-20%	(2) 21%-40%	(3) 41%-60%	(4) 61%-80%	(5) 80%-100%

**NEW—**for each species:

- Infestation zone area for that species (width/length)
- Weed cover of that species within its infestation zone

*(see next slide for details)*

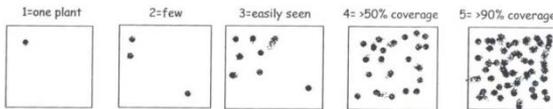
# Data Sheet, page 2

OLD

NEW

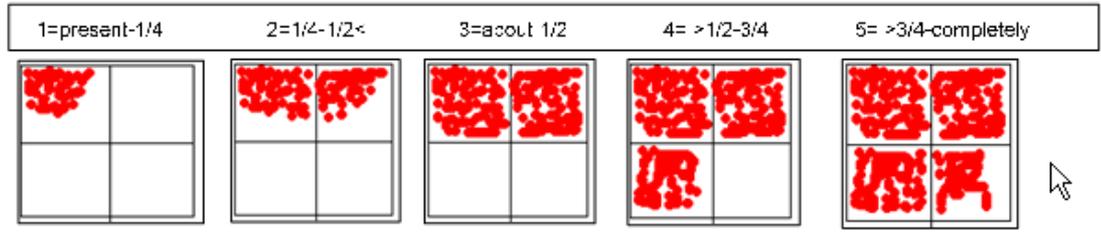
Dominance Rating	Definition
1	It can be found by searching in and around other species. A dominance of "1" is not obvious.
2	It can be seen only by moving through the vegetation or by searching for it while standing on one place. A patchy pattern observed by moving through the vegetation rates a dominance of "2".
3	It is easily seen by standing in one place and glancing around, but it is not an obvious dominant. In a mixed stand, several species may fall into this category.
4	It is at least a codominant. It shares dominance relative to cover or is considered slightly subordinate to other species, native or introduced; for example: cheatgrass or Kentucky bluegrass in a rangegrass community or a mixture of weeds on abandoned farmland.
5	It dominates the site. It is dominant in the sense that it provides essentially total cover when viewed casually.

Rough Sketches of Dominance Categories



Cover Class	Definition
	Imagine drawing a dotted line encompassing the entire infestation zone of that weed species within your survey reach. Within that infestation zone, group together all of that species in your mind, then decide on cover class based on the following categories.
1	1%-20% Present, but less than $\frac{1}{4}$ of infestation zone covered by that species
2	21%-40% More than $\frac{1}{4}$ but less than $\frac{1}{2}$ infestation zone covered by that species
3	41-60% About $\frac{1}{2}$ of the infestation zone covered by that species
4	61%-80% More than $\frac{1}{2}$ but less than $\frac{3}{4}$ of the infestation zone covered by that species
5	81%-100% Between $\frac{3}{4}$ and 100% of the infestation zone covered by that species

Rough Sketches of Cover Class:



## Steps:

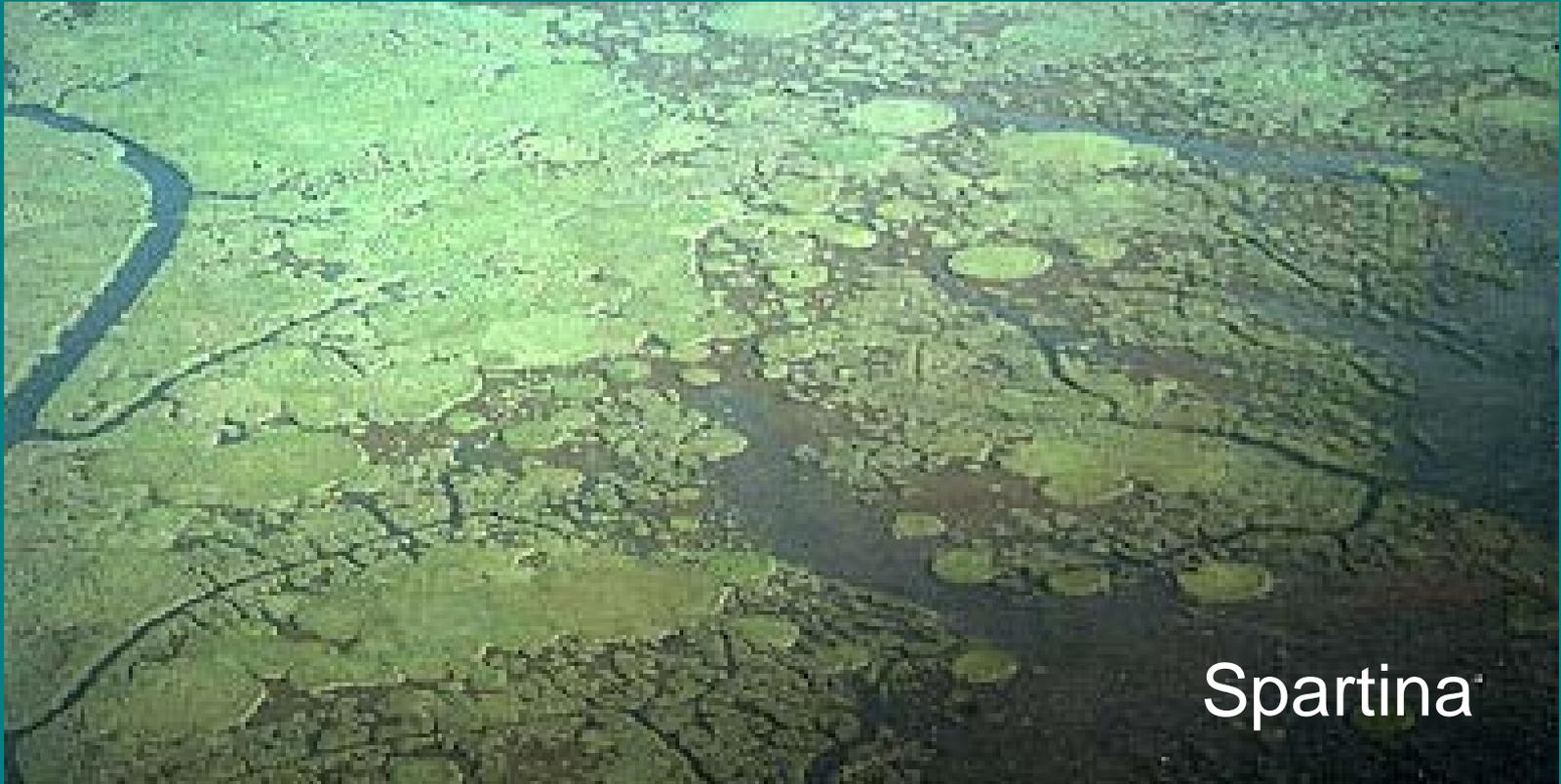
1. Infestation Zone-Imaginary line around ALL individuals of one species.
2. Imagine lumping all of that species of weed into one part of its infestation zone.
3. Lumped together, how much of its infestation zone does that weed cover?

***This new method is better able to track change.***

# Exercise for Field Training

- Look for noxious weeds that are on the data sheet.
- Look for additional invasive, non-native plant species.
- Find and identify native plant species.
- How would you characterize the health of the plant community?
- Are some parts of the reach or stream better than others?
- Does this tell you something about the creek?

# Impact Summary



- Eliminates estuaries
- Destroys shellfish, bird, and invertebrate habitat
- Increases flooding
- Encourages other exotic species

# Impact Summary



- Crowds out native vegetation
- Reduces wildlife habitat
- Reduces natural inputs to stream structure

# Impact Summary



Reed canary grass



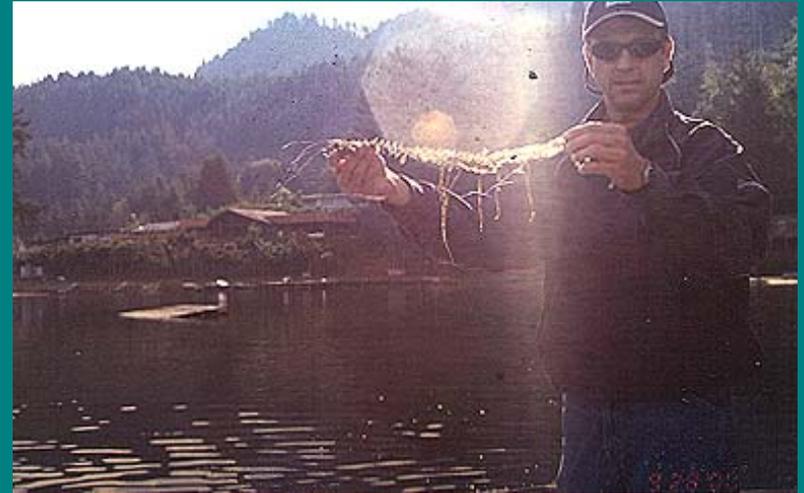
Purple loosestrife

- Destroy fish and invertebrate habitat
- Impact water quality
- Impedes restoration efforts

# Impact Summary

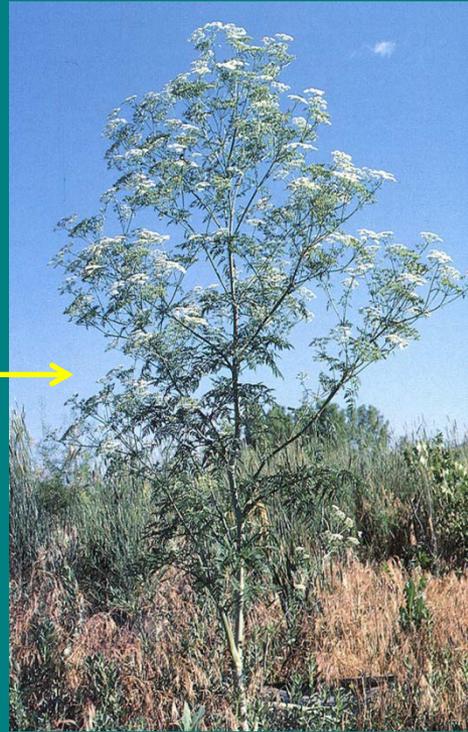


Eurasian milfoil



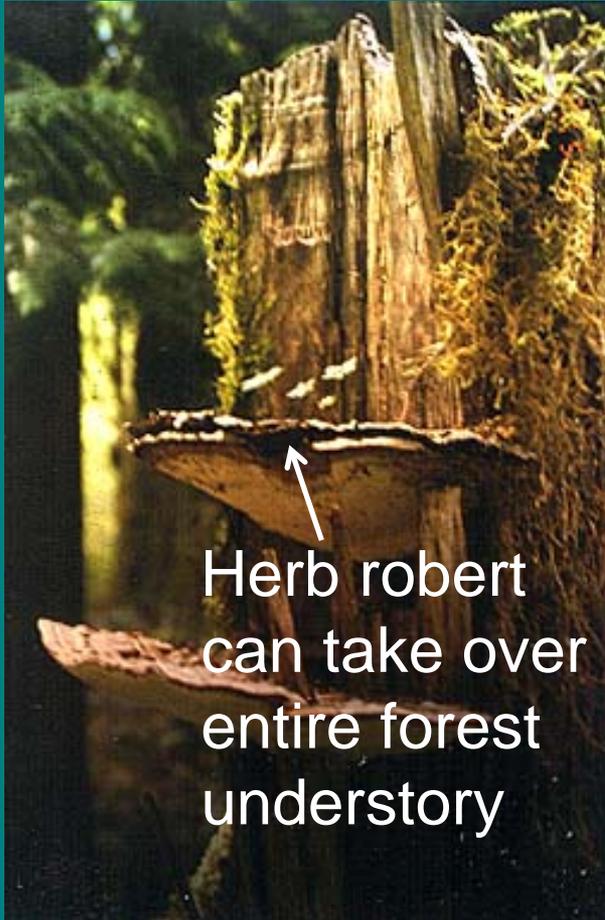
- Reduces land values and recreational use

# Impact Summary



Reduces forage, threat to human or animal health

# Impact Summary



Herb robert  
can take over  
entire forest  
understory



Bleeding heart thrives in diverse community

# Others not on the list?

Things to think about:

- Does it self seed or spread easily?
- Is it out-competing other plants?
- Does it form a monoculture?

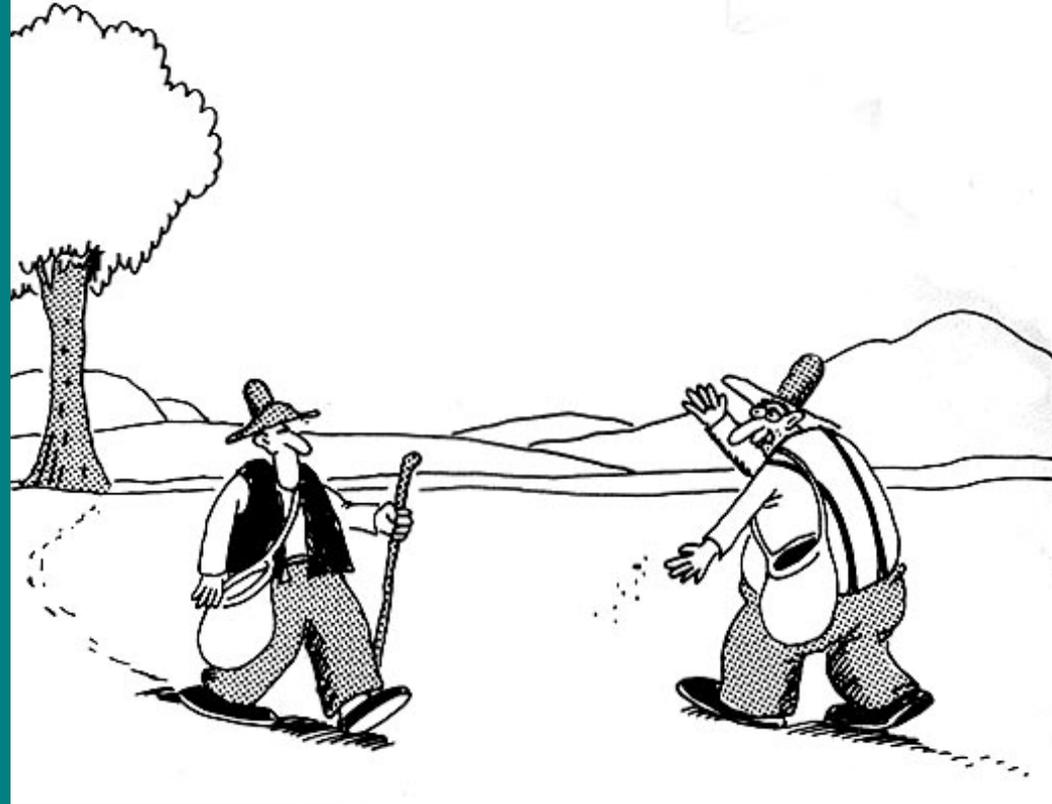


English Holly



Spotted Jewel Weed

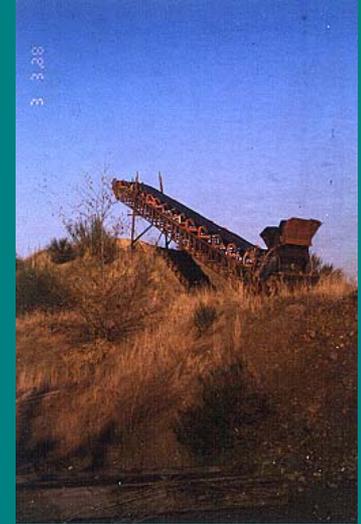
# True Origin of Weeds



**Crossing paths on their respective journeys of destiny, Johnny Appleseed and Irving Ragweed nod “hello.”**

*Larson*

# People Move Weeds!



- Sneaky Hitchhikers
- Moving Commodities
- Traffic
- Contaminated Soil
- Restoration
- General Maintenance

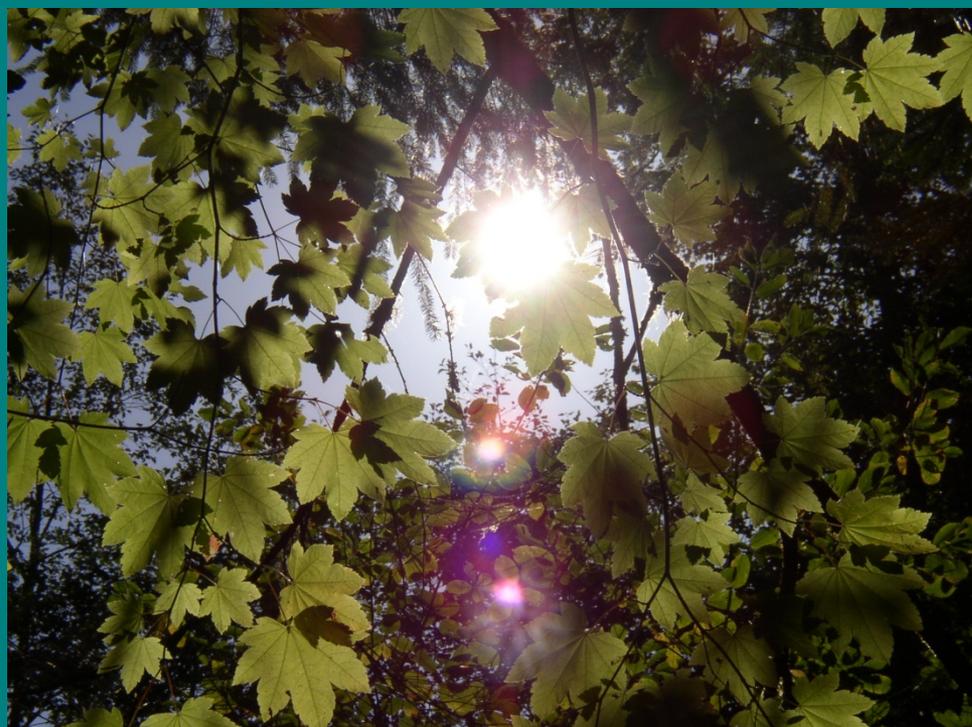
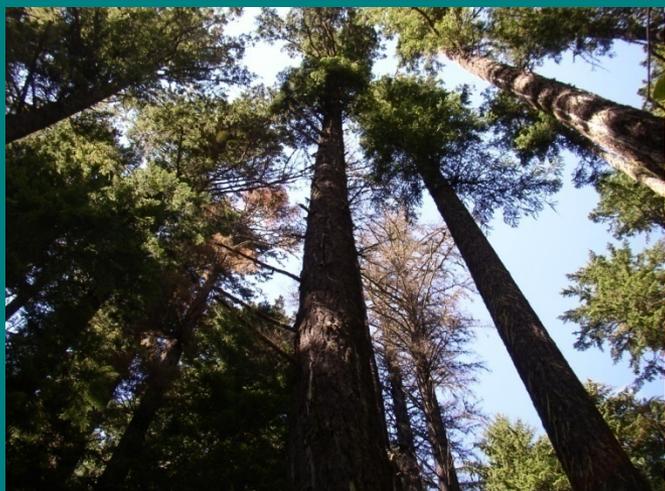
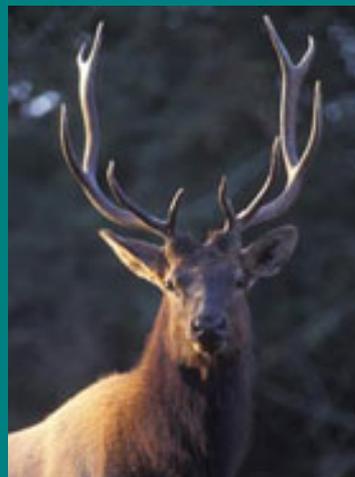
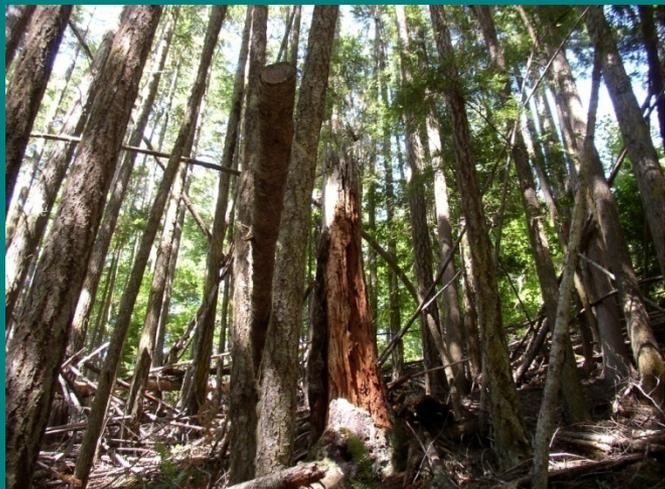
Nature takes over!





**Holy  
Hogweed,  
Batman,  
what  
should we  
do?**

# Protect intact habitat



Know your native!



*Sue Palmer  
2006*



A yellow excavator is positioned on a rocky riverbank, working on a pile of rocks. The foreground is dominated by several large, cut logs lying on a bed of smooth, rounded river stones. The background shows a dense forest of green trees. The scene is brightly lit, suggesting a sunny day.

Monitor for weeds  
after ground  
disturbing  
restoration.

Become the expert! Watch for new plants or “suspicious” plant behavior.



Hoary alyssum (*Berteroa incana*)

Spotted at Evans Road



Hairy Willowherb (*Epilobium hirsuta*)

Spotted at Carrie Blake Park

Look what the dog dragged in



Avoid “over achievers”





Choose weed-free bird seed.

Use weed free compost materials and mulch.





Know your soil source

Scotch broom and other noxious weeds congregate in pits and other soil storage areas



Use weed free erosion control materials and mulch

CERTIFIED WEED-FREE  
STRAW & FEED REQUIRED  
ON NAT'L FOREST LANDS

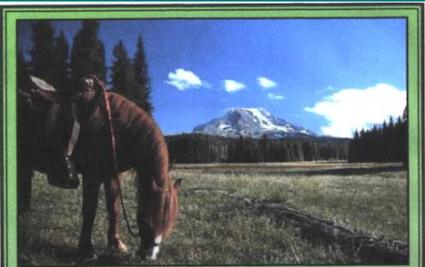
6.2.197

**WWHAM:** Locally available!



## Washington Wilderness Hay and Mulch

- [http://www.nwcb.wa.gov/WWHAM/WWHAM\\_suppliers.htm](http://www.nwcb.wa.gov/WWHAM/WWHAM_suppliers.htm)
- <http://www.nwcb.wa.gov/FAQs/weed-free.htm>



**Washington  
Wilderness  
Hay and Mulch  
(WWHAM):**

*Frequently Asked Questions  
About Buying & Producing  
WWHAM Products  
in Washington State*



You never know what you'll get in your hay bale...





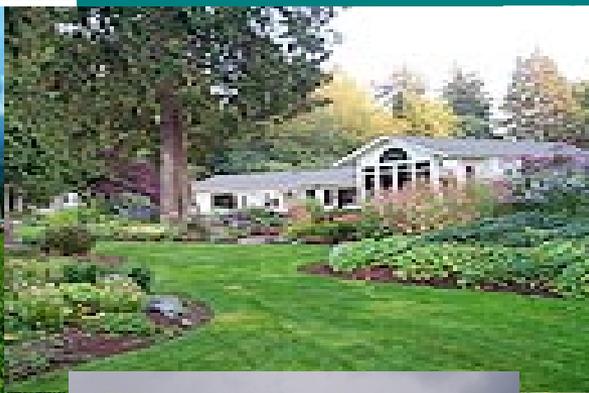
Keep equipment weed free

# Get involved!

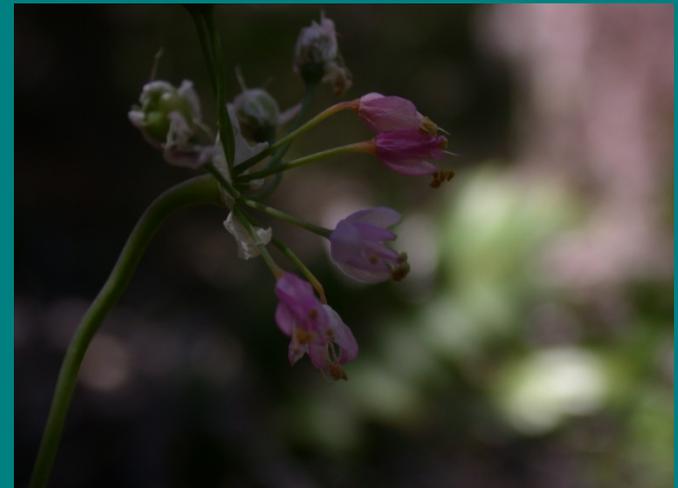




# Ultimate Goal: Protect Land Uses and Values



# Ultimate Goal: Protect Natural Resources



QUESTIONS?

NEVER GIVE UP RD

122

95

DEAD END

25

