

# Streamside Living



# What do streams need to be healthy?

- ◆ Plants, Plants, Plants!!! In-tact and functioning riparian zones/buffers.
- ◆ Stable stream banks that reduce sedimentation and erosion.
- ◆ Pollutants that are trapped and filtered before they enter the water!

# Streams Need Riparian Buffers!



# Riparian Areas

What are they and why are they important?



# Riparian Zone Definition:

- ◆ The transition zone between land and water (along streams, rivers, lakes, wetlands and estuaries).
- ◆ Riparian zones support a high diversity of plant and animal species (about 85% of Washington's terrestrial wildlife use riparian areas during a portion of their life -Knutson & Naef, 1997).

# Riparian Functions:

- ◆ Vegetation stabilizes banks and reduces erosion
- ◆ Improves water quality by filtering pollutants
- ◆ Provide shade to cool water (enhances aquatic life)
- ◆ Provide large woody debris (LWD) which stabilizes streambeds and banks and improves fish and wildlife habitat
- ◆ Reduce flood water velocity and trap mobile LWD
- ◆ Provide high quality wildlife habitat and travel corridors (food, water, and shelter, all in same place)

# Shade



# Bank Stabilization



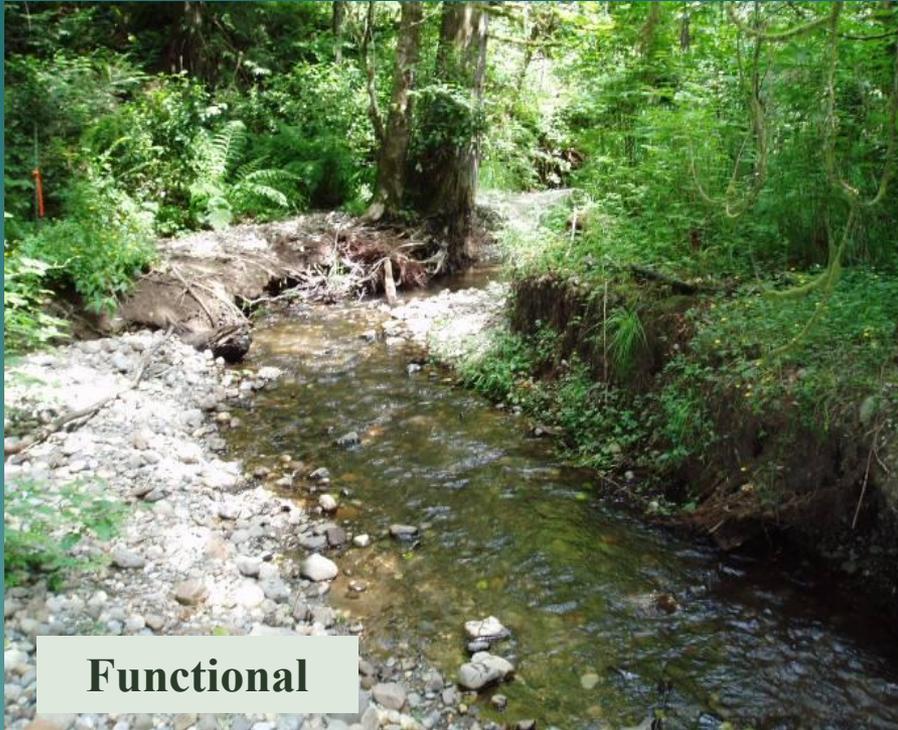
# Large Woody Debris (LWD)



# Wildlife Habitat



# Functional vs. Degraded Riparian Areas



Since the 1800s, at least 50% and up to 90% of riparian areas in Washington have been lost or modified.

- Knutson & Naef, 1997



# Without Plants/Buffers



**Large slump on Ellis Creek**

**Fall-2008**



# \$\$\$\$!!! Dollars Later...



# Lawns Don't Make Good Buffers!



**Small backyard slump on  
Woodland Creek**



# Small buffer of plants installed.

Project with TCD and Stream Team



# Invasive Riparian Plants

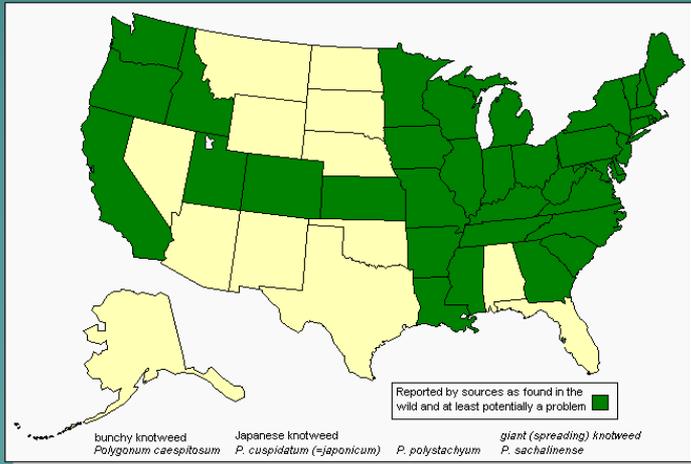
- ◆ Knotweed
- ◆ Himalayan blackberry
- ◆ Reed canary grass
- ◆ English ivy
- ◆ Canada thistle



# Knotweed

## ◆ Three Species

- Japanese
- Giant
- Bohemian



# Himalayan and Evergreen Blackberry

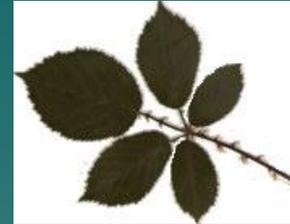


Photo: Stilly-Snohomish Fisheries Enhancement Task Force

# Reed Canary grass



Elizabeth J. Czarapata



- Alaska
- District of Columbia
- Hawaii
- Puerto Rico
- Virgin Islands

HEHE

# English Ivy



# Canada Thistle



# Controls

- ◆ Mechanical: Mowing, Digging, grubbing and pulling.
- ◆ Repeated cuttings - 5 to 15 times per year!
- ◆ Smothering - with maintenance.
- ◆ Chemical control: specific and non specific (bio-control)
- ◆ Shade - species selective
- ◆ Grazing- when appropriate
- ◆ Flooding - where feasible
- ◆ Burning - where feasible



# Riparian Conservation and Restoration Practices

- ◆ Riparian planting (native plants)
- ◆ Bioengineering on eroding stream banks as appropriate
- ◆ Livestock exclusion fencing
- ◆ Limited access or off-stream livestock watering systems
- ◆ Large woody debris emplacements (engineered log jams)

# Riparian Planting



Site Preparation



Planting



Planting



Tree Protector Install

# Tree Protectors: Protect Your Investment!



- ◆ Make sure protector is held securely against the ground.

# Livestock Exclusion Fencing



## ◆ Riparian Fencing:

- Prevents damage to riparian plants
- Reduces erosion and compaction of streambanks
- Reduces fecal contamination of surface water



# Limited Access or Off-Stream Livestock Watering

Limited Access Watering Site



Nose pump (off-stream watering)

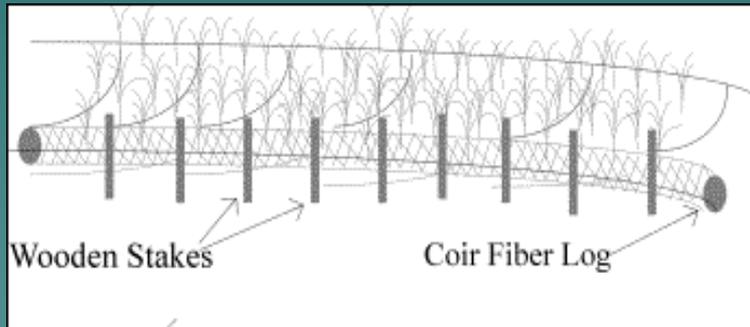
# Bioengineering

- ◆ Combination of engineered soil/wood/rock work and live native plant material - often used to stabilize eroding stream banks
  - Vegetation roots stabilize soil, minimizing or eliminating the need for rock to harden the stream bank
  - Bank typically graded at 2:1 Hor:Vert. or more
  - \*Permits required\*

# Toe Protection

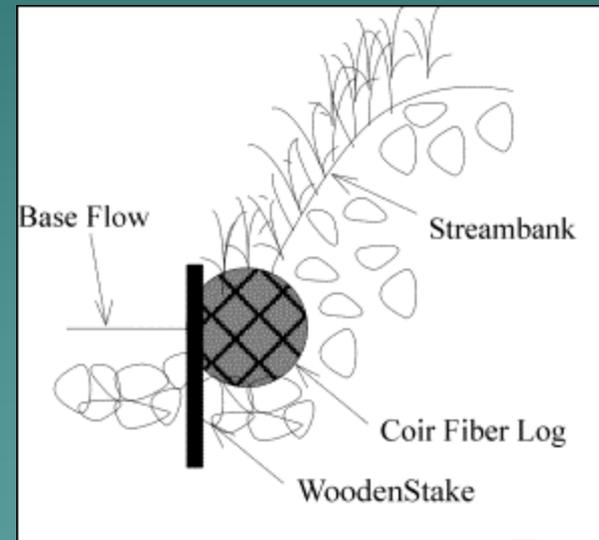
- Toe: where bed and bank meet - susceptible to erosion

Profile View



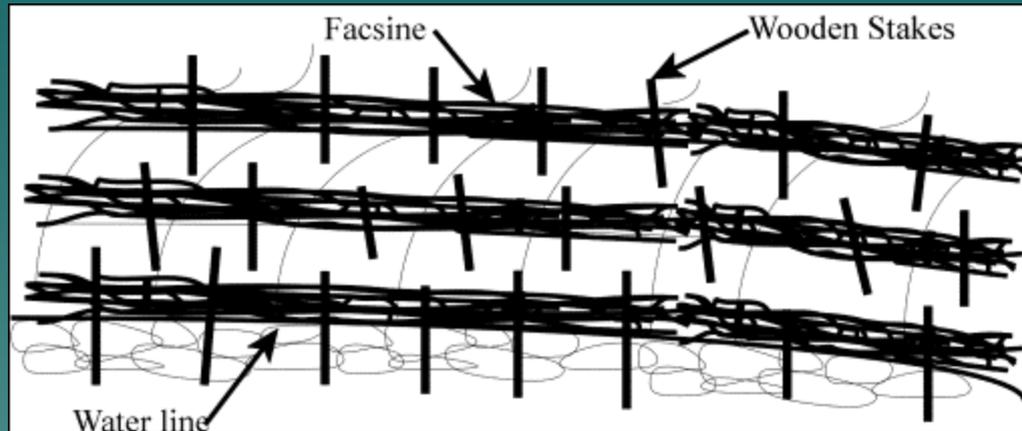
- Coir fiber log
- Large woody debris (LWD)
- Rock
- Combination

Side View

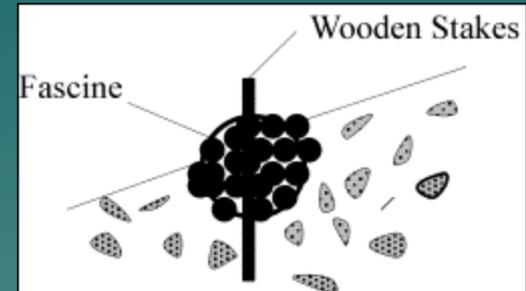


# Fascines & Waddles

Profile View



Side View



- Bank is graded to stable angle (generally 2:1 Hor:Vert or more) and toe protection installed as needed
- Rows of live and dead plant material that roots from cuttings and is suited to the hydrologic conditions (willows, red-osier dogwood, cottonwood, etc.)
- Bundles about 10 ft. long and 8-10 in. diameter (secure with wire or coir twine)
- Bury about ½ of bundle in trench and backfill soil over bundle, leaving some plant material exposed (good soil contact promotes root growth)
- Anchor with wooden stakes and either wire or coir twine

# Willow terraces



# Willow Cuttings

Project included:

- Bank grading (SPSSEG)
- LWD toe protection (SPSSEG)
- Streambed material import (SPSSEG)
- Live willow cuttings (TCD)



## ◆ Installing willow cuttings:

- Purchase cuttings or harvest your own (cut the top flat and the bottom at an angle).
- Soak the cuttings in water for 5 to 30 days prior to planting.
- Install  $\frac{3}{4}$  of the cutting into the soil (make sure to install the cutting with the top up!)
- If installed in the fall, water cuttings until they go dormant.



# Native Plants: Adaptable and Attractive

- ◆ Native plants can be chosen to fit your needs (for example, views can be preserved by choosing plants based on size, plant shape, pruning tolerance, etc.)
- ◆ Native plants generally require less maintenance than non-native species. However, seedlings do need to be watered the first several summers to get the plants established.
- ◆ Many native plants produce attractive flowers, fruits, and fall foliage that enhance the landscape and offer critical habitat for wildlife.

# Examples of Attractive Native Plants

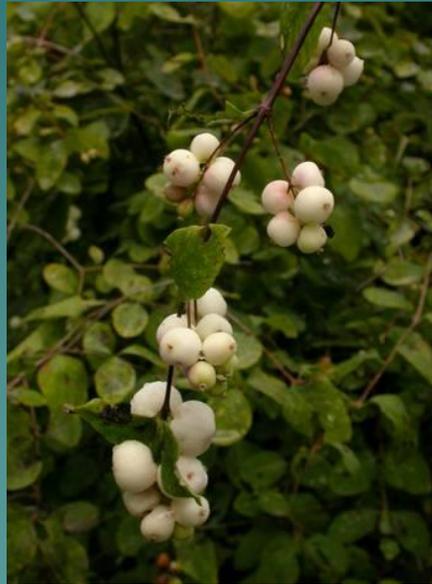


# Structure and Layers

- ◆ Choose plants of varying textures, heights and shapes to offer diverse and attractive habitats



**Red Elderberry – tall 6-15ft.**

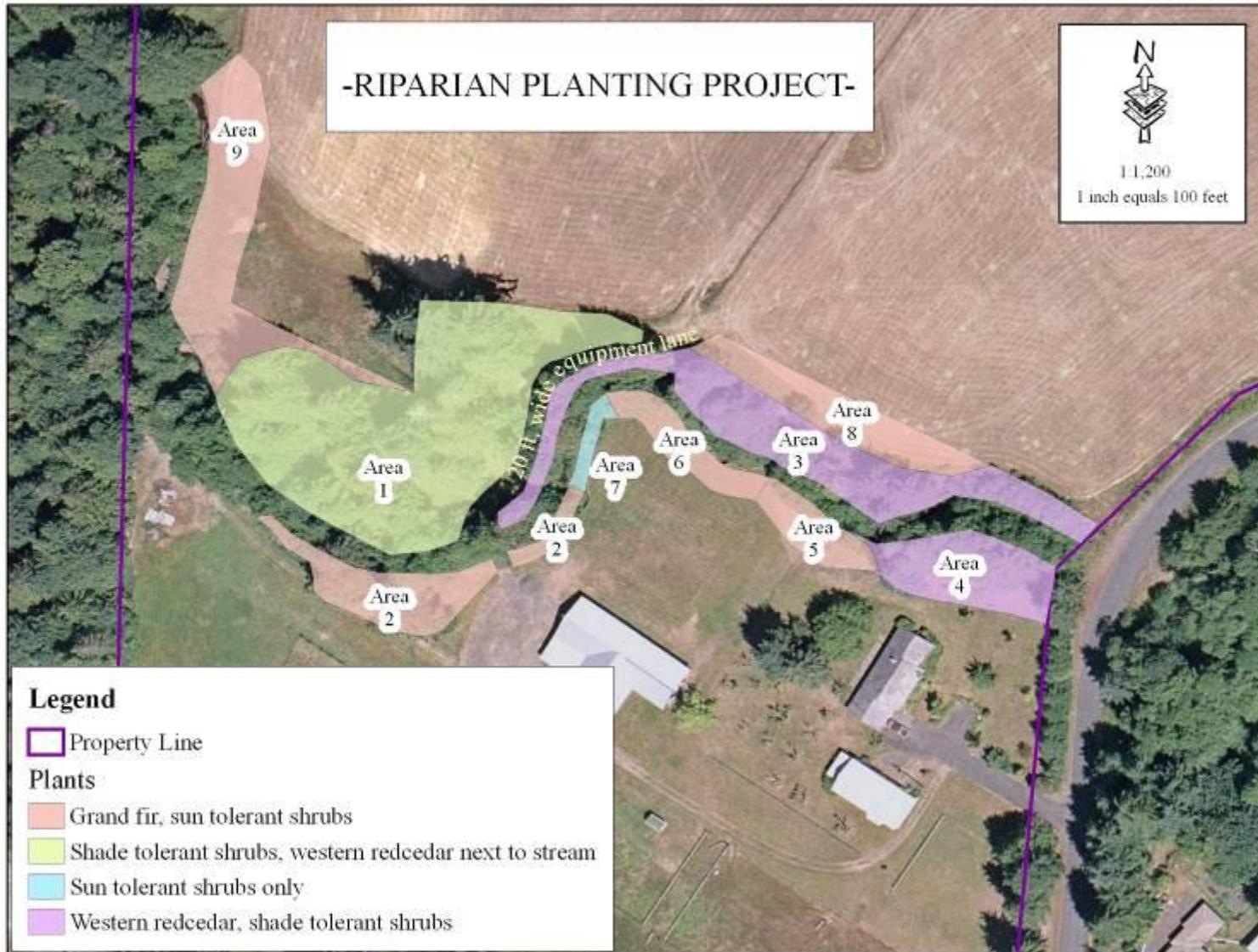


**Snowberry -  
medium 2-5ft.**



**Kinnikinnick - low 3-6 inches**

# Planting Plan Map



# Conservation Planning & Cost Share

## ◆ Programs Available:

- Conservation planning (nutrient management, animal husbandry, pest management, etc.)
- Conservation Reserve Enhancement Program (CREP)
- Conservation Reserve Program (CRP)
- Wildlife Habitat Incentive Program (WHIP)
- Environmental Quality Incentives Program (EQIP)
- Dept. of Ecology water quality grants
- Other options: Salmon Recovery Funding Board, Community Salmon Fund, U.S. Fish & Wildlife Service

# Conservation District Contacts

- ◆ Thurston CD: (360) 754-3588
  - <http://www.thurstoncd.com>
- ◆ Lewis County CD: (360) 748-0083
  - <http://lccd.scc.wa.gov>
- ◆ USDA programs info:
  - <http://www.nrcs.usda.gov/programs>
- ◆ Local Stream Teams: (360) 754-3355 ext. 6857
  - <http://www.streamteam.info/>

# Deschutes Education and Outreach

- ◆ Workshops and Mailings
  - ◆ Postings and literature in local feed and garden stores
  - ◆ Direct mailings to riparian landowners using GIS
  - ◆ Water quality programs: Deschutes Watershed Stewards
  - ◆ Equipment rentals and site assessments
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# For more information:

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# Thank You!

