

SCOTCH BROOM

Sources, Spread, and EDRR

PLUS: Weed-Free Gravel and How to Achieve It



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**Mature native forests are an implicit goal...
Forest succession = resiliency to disturbance**



Disturbance favors invasive plants: Channel migration, flow and sediment flux



Scotch broom invades rivers, floodplains, & forests



Scotch broom ecology

- Deeply rooted, reaching hyporheic water while native species die from drought; and survives floods
- 12,000 seeds per mature plant, viable for 90 years
- Toxic, avoided by grazers
- Allelopathic, affects mycorrhizae
 - Grove S, Haubensak KA, Parker IM (2012) Direct and indirect effects of allelopathy in the soil legacy of an exotic plant invasion. *Plant Ecol* 213:1869–1882
- Arrests forest growth and succession
- Flammable, reduces resiliency



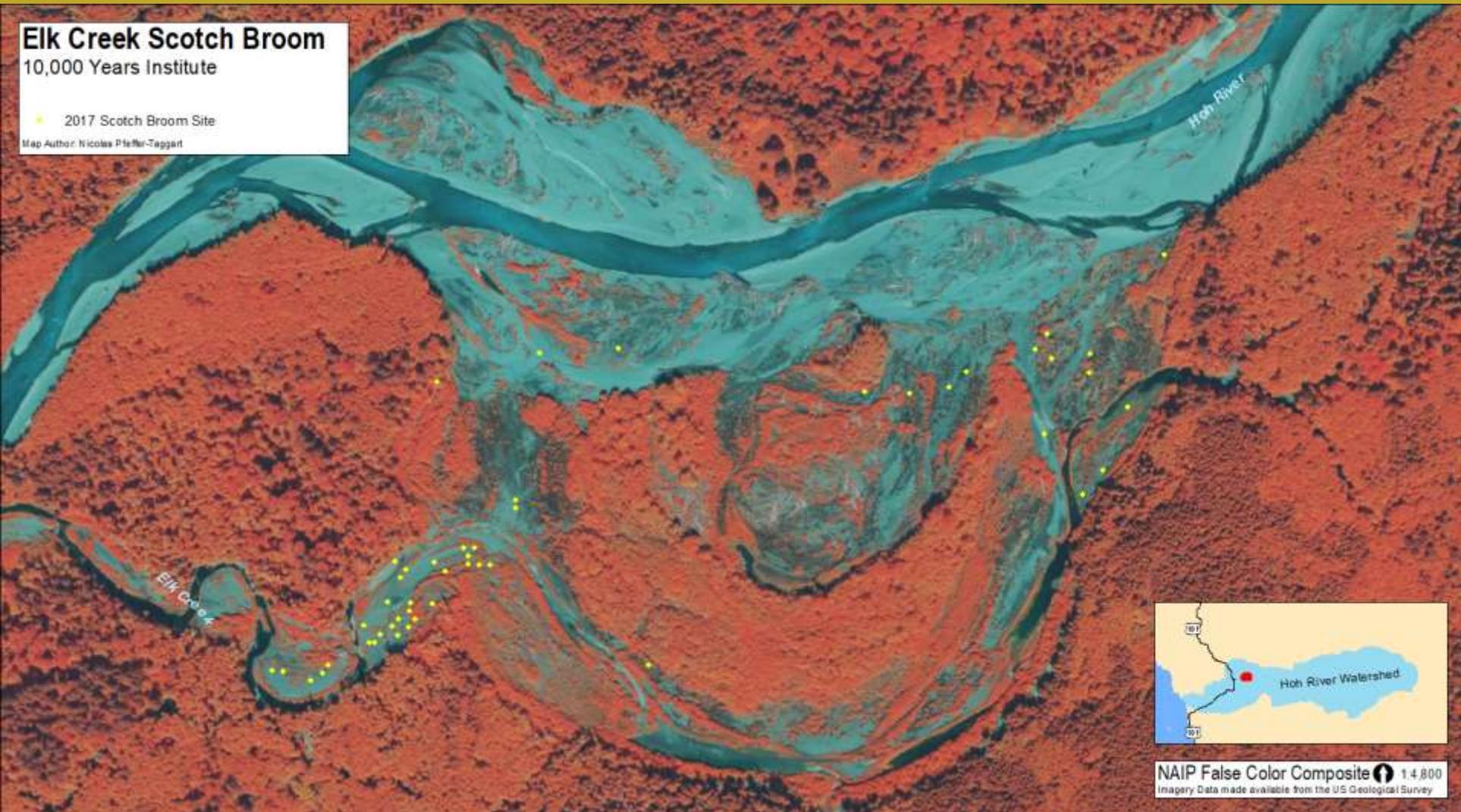
Scotch broom sources



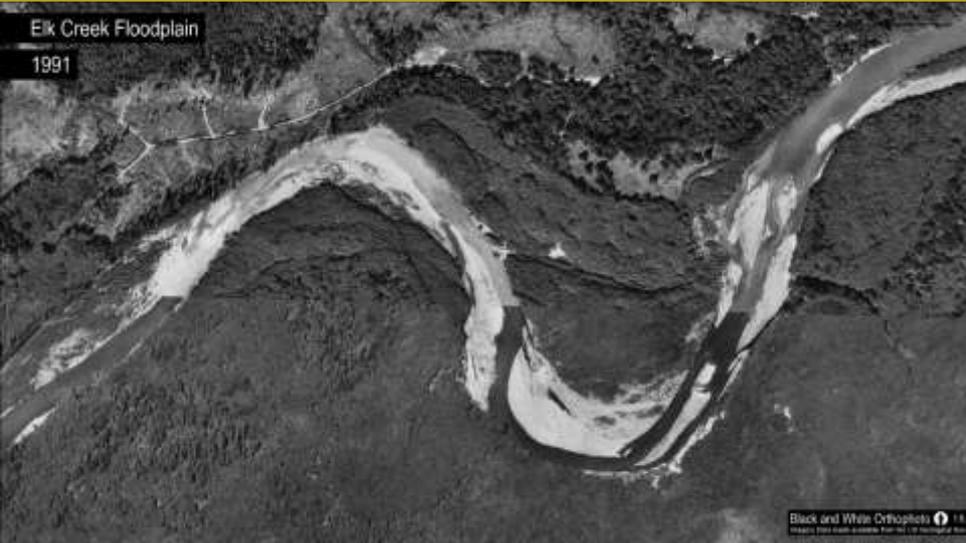
Spread and impacts



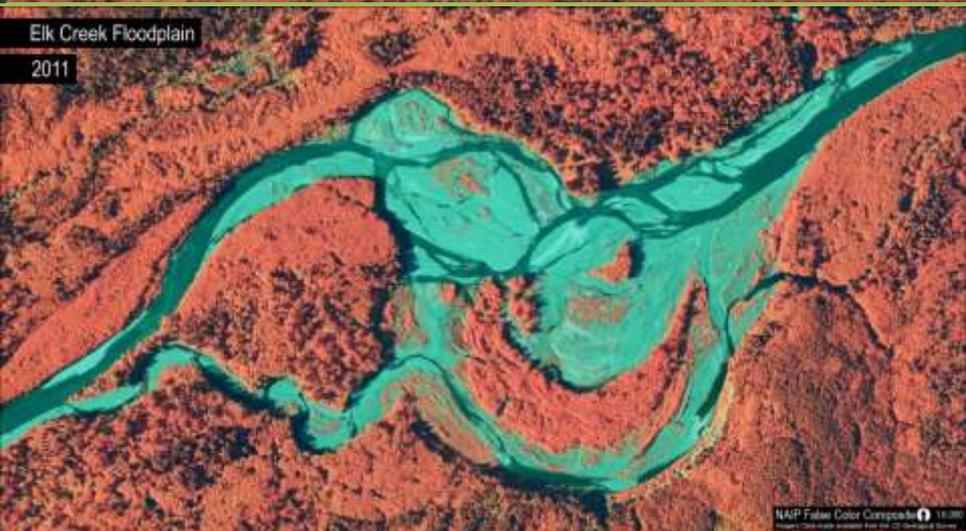
Spread and impacts



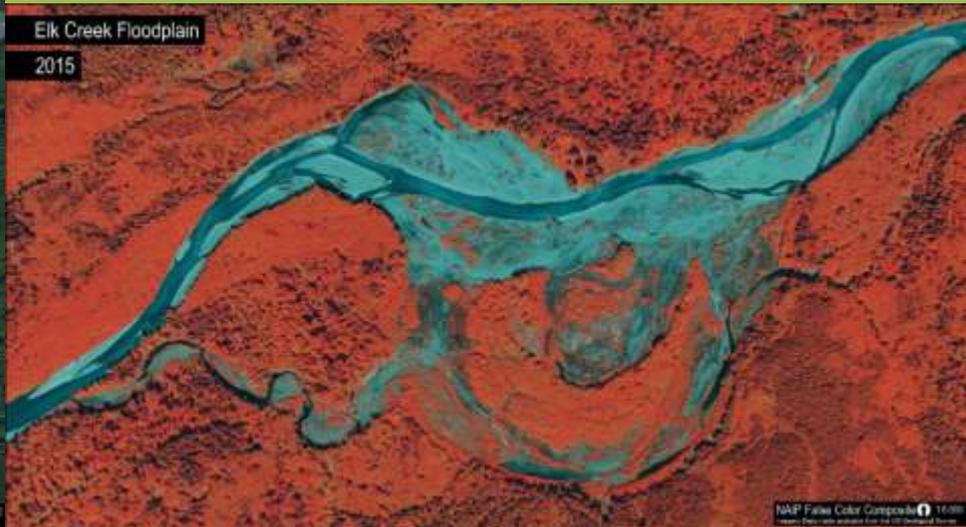
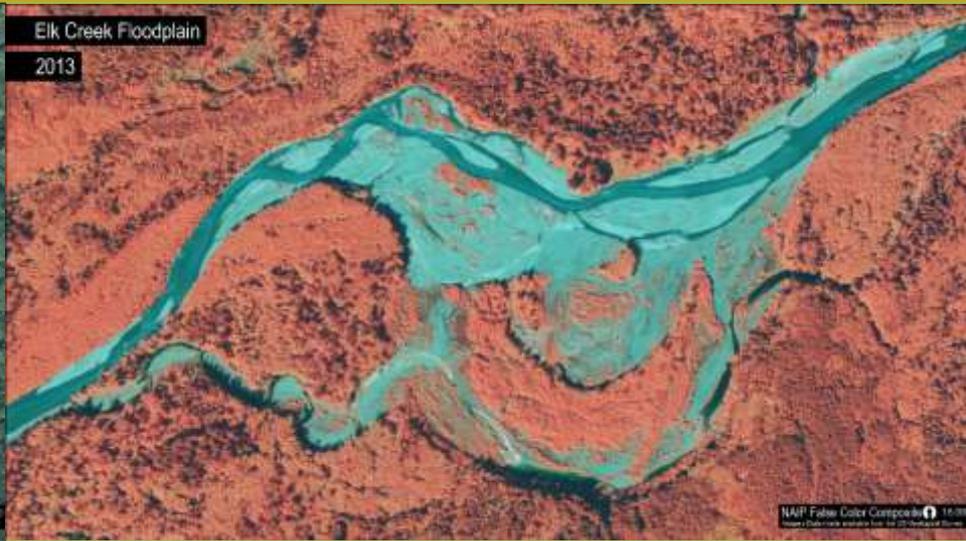
Time change analysis, 1991 to now



Scotch broom arrives and is buried...



Scotch broom is well-established.



Restoration is required...

<https://www.youtube.com/watch?v=T-4h7PwwRZY&feature=youtu.be>

Weigh the costs?

Observation and hypothesis:

Scotch broom arrests forest succession to conifer species, reducing or eliminating forest functions:

- Shade, microclimate
- Bank stability, sediment filtration
- Timber, CWD, and LWD, nutrients
- Habitat for fish, wildlife, livestock
- Carbon sequestration and storage

What are the costs to forestry, fisheries, agriculture, recreation?

What are the costs to prevent?

What are the costs to restore?



Cost to Benefit of ED\RR and Control

- **Cost to Oregon State Forests per year: \$40,000,000/year**

2016 OR DOA Report:

<http://www.oregon.gov/oda/shared/documents/publications/weeds/ornoxiousweedeconomicimpact.pdf>

- **Cost to Washington State if not controlled: \$142,800,000/year**

2017 WISC/WSDA/WSNWCB Report:

http://www.invasivespecies.wa.gov/council_projects/economic_impact.shtml

- **Highly flammable – costs of fire-fighting not yet internalized**
- **Need to quantify the cost to clean mines and certify clean gravel vs. the costs to control post-invasion.**



Pulling Together in Restoration!

Funding provided by:

WA State Legislature – WCRI

WA State Department of Agriculture

WA State Salmon Recovery Funding Board

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Why Concerned?

- Rock Sources are a major contributor to introduction and spread of invasive species
- Rock Sources are excellent weed habitat, and provide plenty of opportunity for spread

Why Are Rock Sources Vulnerable?

- ▶ Full sun
- ▶ Lots of disturbance and bare ground
- ▶ Vehicles and equipment constantly coming and going
- ▶ Often used as disposal site for a variety of spoils

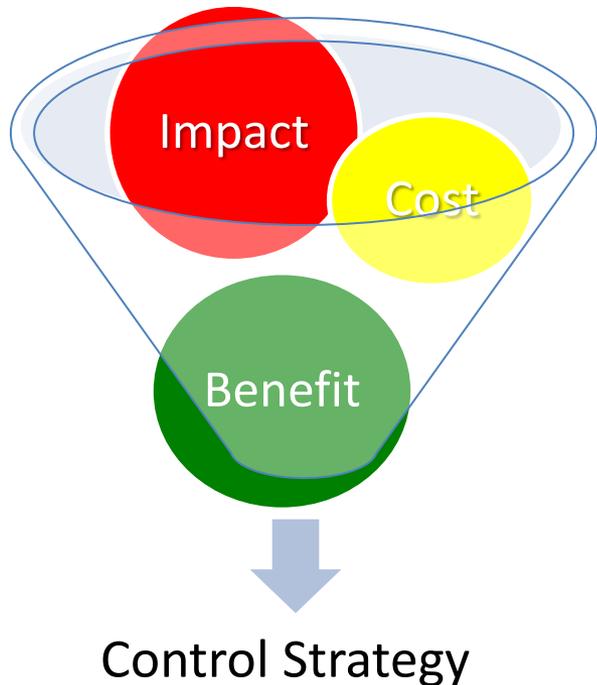
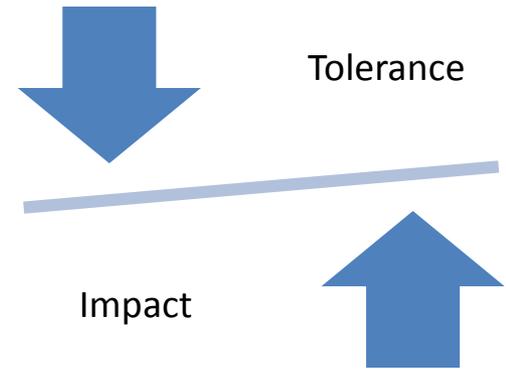


Picture provided by Cheryl Bartlett

Considerations

Objective-Land uses

- Impact
- Weed Tolerance



Infestation level
Site conditions
Resources

Scotch broom: required control in select locations

“Control in and 100 feet around gravel pits or any soil, mulch or mineral mining/ storage areas”.

Clallam and Jefferson County Noxious Weed List

Rationale: Although widespread, curtailing sources of contaminated sources of contaminated soil can reduce the creation of new infestations.

- Effective, efficient preventative measure

What does “Weed Free” mean?

- RCW 17.154: Weed Boards are authorized to accept plans to control weeds over specified period-enforce
- Certification is Voluntary
- Some contamination is expected, tolerance depends on species
- 100% is not realistic-goals need to be achievable, generally expected to control priority noxious weeds and invasive species of special concern
- Annual prioritized list
- Customized plan to reduce likelihood of spread

How do ratings work?

During inspection, rated on:

- Species present, how distributed, how easy or difficult to isolate when removing material
- In general, only agency requiring certification or Weed Board staff can certify

Rock Source Ratings

Rating	What it means
A	<i>Use is unlimited.</i> Weeds are absent.
B	<i>Use is permitted, with few or no prevention measures.</i> Weeds of concern may be present, but are easily isolated and avoided. Up to 10% of the rock source may be unusable due to invasive plants. With some simple prevention measures, removal and use of materials is very unlikely to contribute to the spread of invasive plants. These rock sources are in pretty good shape, as far as weeds go.
C	<i>Use is permitted if no other source is available, but prevention measures must be followed.</i> Up to 50% of the rock source may be unusable due to invasive plants.
D	<i>Quarantined, use is not permitted.</i> Invasive plants of particular concern are present and/or other weeds are abundant and cannot be avoided through preventative measures.

A Rating: No Weeds



What Rating?



2017. 4. 14

Call Me



Cathy is very very scary

I have a list

Main Obstacles:

- Initial Cost: How to get quarries up to speed?
Start now- plan for needs, upgrade over time
- On-going Cost: How to inexpensively keep quarries in state of readiness?
Open up no more than is needed
Promote native cover as much as possible
Put to bed between uses
Are there products out there to speed the process?
Verdyol Biotic Earth, native plant materials?



Picture provided by Cheryl Bartlett



Questions?