Natural Climate Solutions to Protect and Restore Pacific Salmon
(and Build a Resilient Shared Future for All!)

Washington State Salmon Recovery Conference
April 18th, 2023

Jill Silver, Executive Director
10,000 Years Institute
We evaluate the effects of human activities on natural environments – the forests, rivers, wetlands and estuaries that sustain our communities and ecosystems.

Through development of innovative, science-based approaches to restore ecological integrity, we promote sustainable practices in landscapes across the region.
Disturbances = Glacial retreat, extreme rain events, sediment flux and channel migration...

...disturbance encourages invasive species...

...and they move from mines to roads to harvest units and river bars, affecting forest growth.
Trees are the answer ... to slow climate change ...and provide ecosystem services

- Clean air and water
- Carbon sequestration
- Timber and jobs
- Standing dead & down wood
- Shade and humidity
- Habitats
- Soil development
- Food and critters
- Mycorrhizal fungi
- Slope stability
### Riparian services
- Litterfall
- Bank stability
- Insect prey
- Bank protection
- LWD sorts bed materials
- Large fallen trees create deep pools and stable log jams
- Island development
- Passive restoration tool
- Food for aquatic bugs
- Carbon sequestration
Today’s presentation:

• Goal: Natural Climate Solutions implemented by a Coastal Conservation Corps (CCC)
• NCS 1: Forest thinning to promote resilience
• NCS 2: Biochar pyrolysis and production
• NCS 3: Scotch broom prevention and control, and soil remediation with biochar
• Funding: 10% of every restoration and construction project to the CCC...plus...
Climate Conservation Corps

Provides permanent year-round place-based jobs and training

Biomass To Biochar
Coastal/Carbon/Climate Conservation Corps

Permanent place-based conservation corps

Matching local skilled experience with local youth-in-training in work that supports coastal economies.
Focus on Sources, Vectors, and Pathways

Extensive partnerships, building regional capacity

Repeated cross-boundary surveys and rapid response to each plant found – roads and streams, forestland, pastures, municipal, residential, restoration project sites

Developing and demonstrating best management practices, tracking and reporting costs and benefits

Catching each new species before they spread

Training local eyes, hands, and spreading the word through communities.
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Total: $10,470,000
NCS: Goal 1a: Forest Thinning for Improved Resilience

Non-merchantable and young stand thinning - riparian and stand treatments for forest growth, habitat, carbon storage, and biochar – need to manage our forests so there’s value in all we take out and a reduced risk of wildfire.

NCS Goal 1b: Forestry-Focused Aquatic & Riparian Habitat Restoration

De-Incision – Deploy CCC workforce in low-tech strategies to thin overstocked stands for better riparian diversity and size, and place non-merchantable wood to rehabilitate incised streams, reconnect floodplains, expand habitat for biota, store groundwater on hillslopes, reduce downstream flooding, and increase humidity.
Invasive Scotch broom and overly dense stands increase wildfire intensity and severity. Fire scarifies Scotch broom seeds, promotes germination.

Slash pile burning emits carbon dioxide and methane, contributing to climate change, ocean acidification, sea level rise – and impacts human health.
Opportunities and Solutions

Climate Conservation Corps

Biomass To Biochar

Thin forests.
Remove invasives.
Convert waste to biochar.
Biochar

Solid carbon produced by pyrolysis of biomass in the absence of oxygen
Stores carbon for millennia, holds water in soils, and increases beneficial soil microbes for better plant growth

Carbon sequestration and carbon credits

Water storage, filtration & purification

Binding agent for asphalt & concrete

Soil amendment
BIOCHAR – Using Fire to Cool the Earth
Rationale and Resources

https://biochar-us.org/presentations-biochar-woods-webinar-and-field-days-jan-feb-2022

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Carbon Conservation Corps

Conduct mobile biochar production from waste biomass

We already employ large hand crews in the dangerous work of firefighting. We could use this labor to reduce fire danger by thinning overcrowded plantations, and improve forest soils by adding biochar, while sequestering carbon from the atmosphere.

Kelpie Wilson
Wilson Biochar Associates

www.slideshare.net/kelpiew/a-carbon-conservation-corps-for-mobile-biochar-production
Char Boss: Curtain of air burns gases. Biochar withdrawn continuously through a grate.

1-2 tons (10-20 CY) per hour IN

1-2 tons (14CY)/day OUT

Air Burners Inc.- USFS Cooperative Research and Development Agreement

USFS Monthly Biochar Webinar Series 2020: Production

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Applications to Support Investments in CCC and Forest Health

Research – Carbon, Seedbank, Red Alder, Nutrients, Water, Mycorrhizae...

Remote Sensing - Aerial photography in May and more...
Scotch Broom Costs in the Washington State Economic Impact Analysis

• Cost to Oregon State Forests per year: $40,000,000/year
  2016 OR DOA Report:

• Cost to Washington State if not controlled: $142,800,000/year
  2017 WISC Report:

• **Highly flammable** - costs of wildfire hazard not yet internalized in analysis

• Need to quantify costs to salmon recovery

• Need to quantify the cost to clean mines and certify clean gravel vs. the costs to control post-invasion

• $200/road mile to $3,000/acre (PTIR)
10,000 Years Institute Crews at Work
Partners, Collaborators, and Funders...
Thank YOU!

Want a CREW?

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