

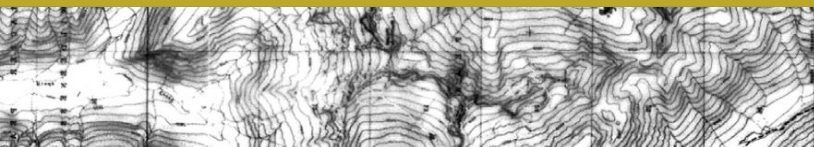
# Biochar and Scotch Broom Pyrolysis Project



**OLYMPIC WEED WORKING GROUP**  
*FALL MEETING*

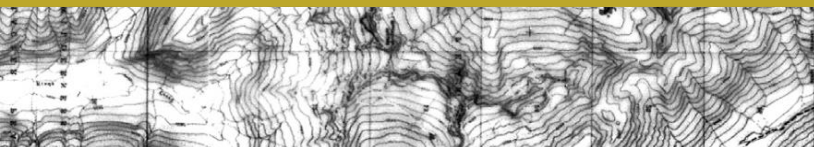
November 13<sup>th</sup>, 2019

**Jill Silver & Jim Heuring**  
**10,000 Years Institute**



**10,000 YEARS INSTITUTE**  
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# Scotch Broom Ecological Impact Study and Pyrolysis POC Project



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# BIOCHAR: Harnessing carbon to help solve the climate crisis

## BURN Using Fire to Cool the Earth

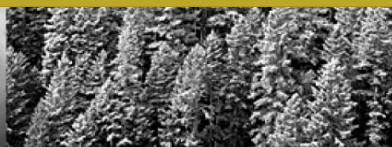
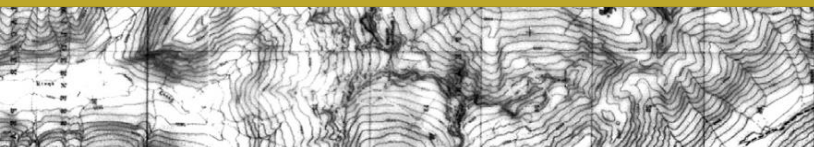
Albert Bates and  
Kathleen Draper

[www.chelseagreen.com/product/burn](http://www.chelseagreen.com/product/burn)

Moving carbon from wasted sources into soils and agricultural systems to:

- rebalance the carbon, nitrogen, and related cycles
- enhance nutrient density in food
- rebuild topsoil
- condition urban and agricultural lands to withstand flooding and drought
- cleanse water by carbon filtration and trophic cascades within the world's rivers, oceans, and wetlands
- shift urban infrastructures to incorporate drawdown materials and components, replacing steel, concrete, polymers, and composites with biological carbon to drive economic reorganization by incentivizing carbon drawdown

**Fully developed this approach costs nothing—to the contrary, it can save companies money or provide new revenue streams.**



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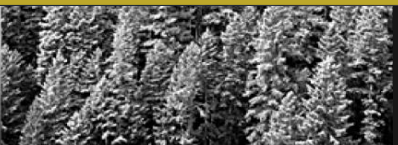
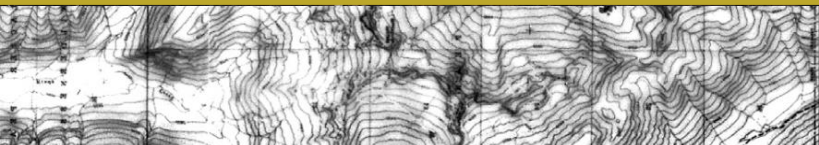
# BIOCHAR: Harnessing carbon to help solve the climate crisis



## Biochar: The science behind the hype



**Kurt Spokas**  
Research Soil Scientist  
USDA/ARS – St. Paul, MN

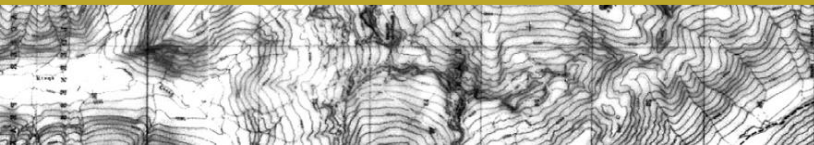


# Pyrolysis with Top-lit Updraft Gasifier (TLUD)

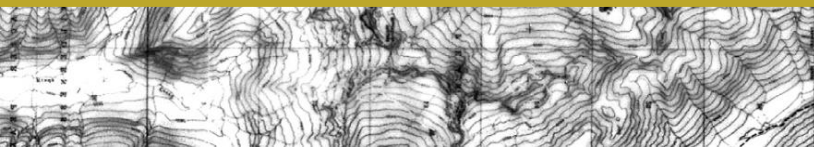


← Norm Baker

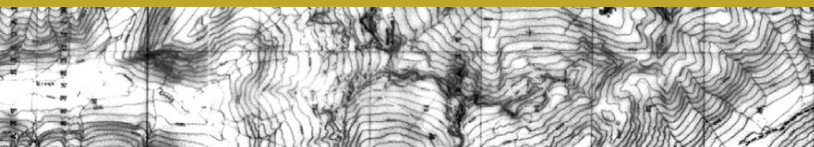
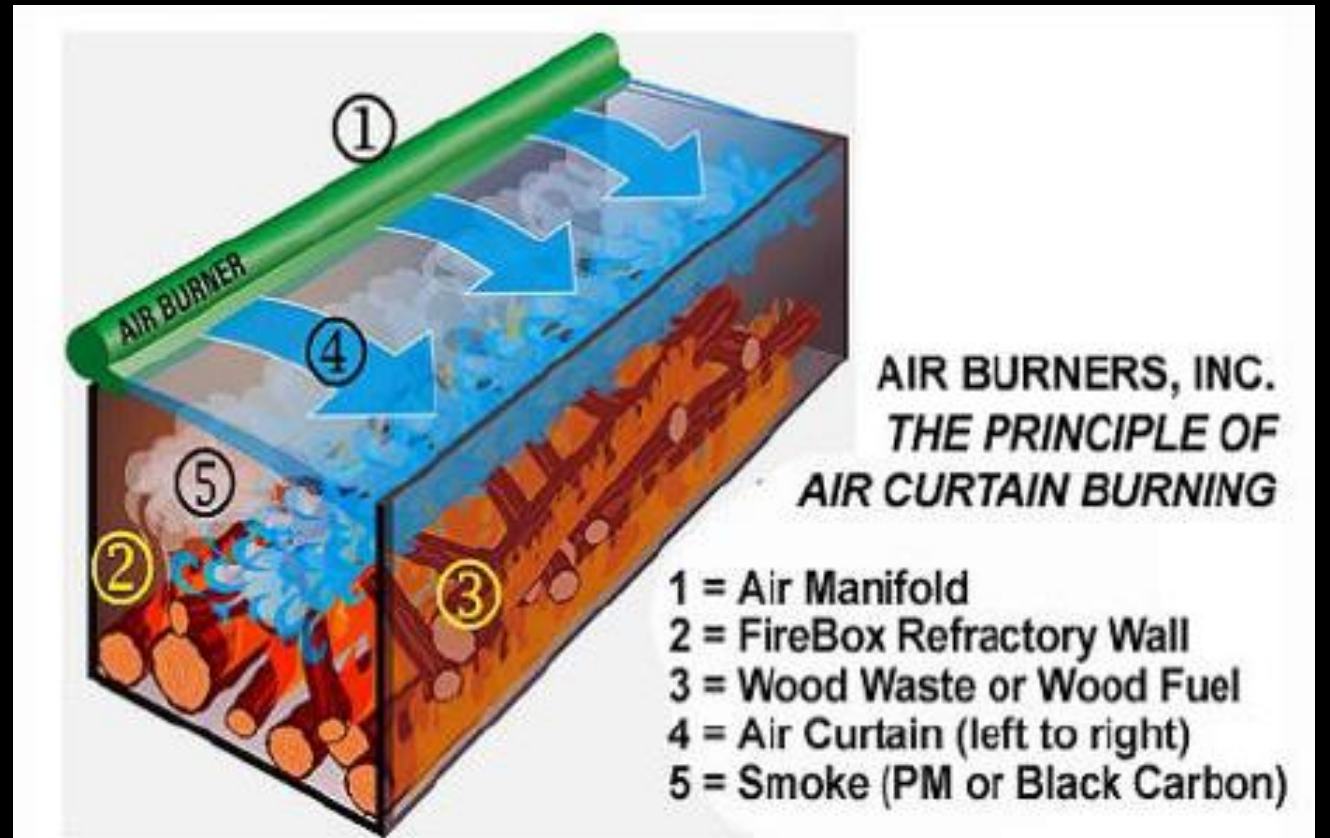
- Developed TLUD models
- Demonstrated how models make biochar



# Pyrolysis with Top-lit Updraft Gasifier (TLUD)



# Air Burner's Trailer-Mounted Firebox



# Scotch Broom Ecological Impact Study



## Questions of interest:

- Is Scotch broom arresting the succession of riparian communities?
- What factors are limiting riparian plant establishment and growth in areas where Scotch broom occurs?
- Do soil legacy effects of Scotch broom limit riparian plant establishment and success?

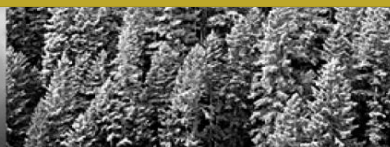
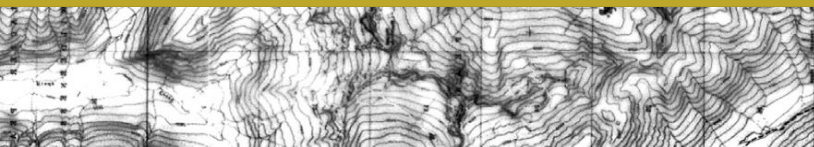
## Partners:



UNIVERSITY OF CALIFORNIA  
**SANTA CRUZ**



The Nature  
Conservancy



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# Scotch Broom Ecological Impact Study



## Study design

- 280 Plots
- 4 Hoh River sites
- Comparing alder and willow growth in areas invaded and uninvaded with Scotch Broom

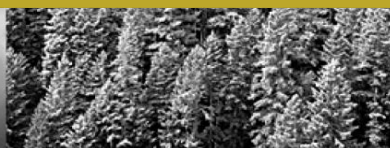
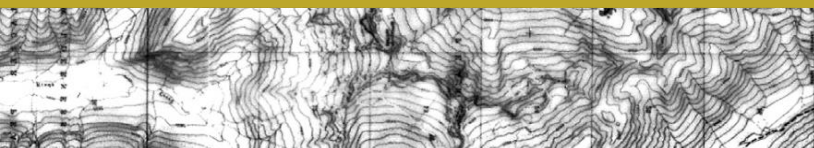
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**SANTA CRUZ**



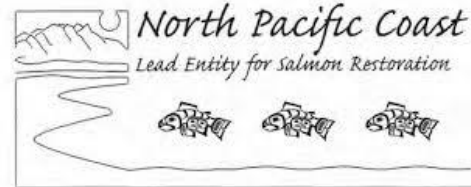
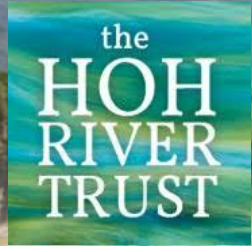
The Nature  
Conservancy



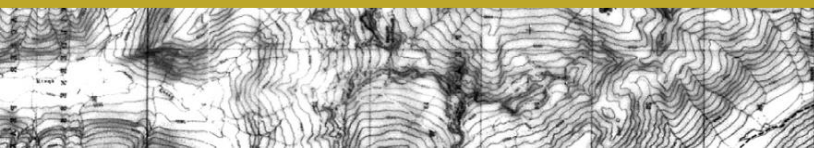
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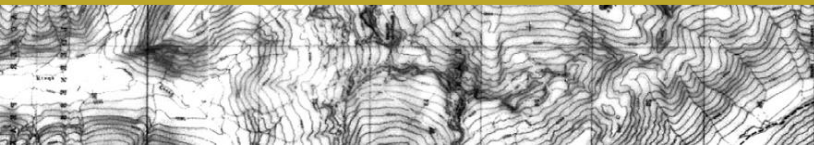
# 10KYI's Partners and Collaborators



# Scotch Broom Drying Piles

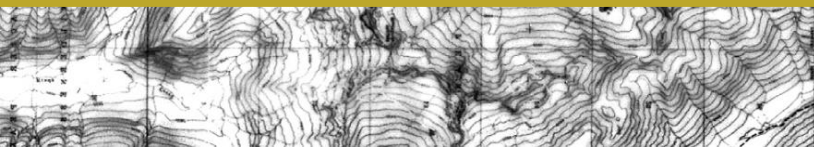


# 10KYI Restoration Technicians Treating Scotch Broom



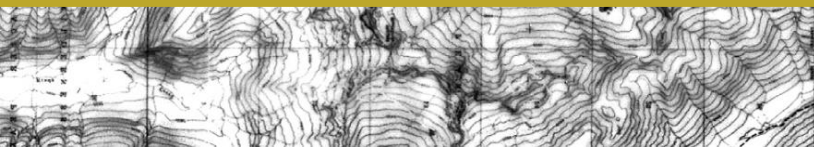
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# 10KYI Restoration Technicians Treating Scotch Broom



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# 10KYI Restoration Technicians & Volunteers Scotch Broom Treatment



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