



**Stepping Outside the Lines:** Collaboration, pragmatism and stewardship in design, construction and maintenance of a restoration project.

Justin Howell - Owner/ Manager Applied Ecology LLC

# Restoration an Overview

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- ❖ Turning back the clock?
- ❖ Fixing broken ecosystems?
- ❖ Building novel ecosystems?
- ❖ Building Infrastructure?



# What Is Applied Ecology?

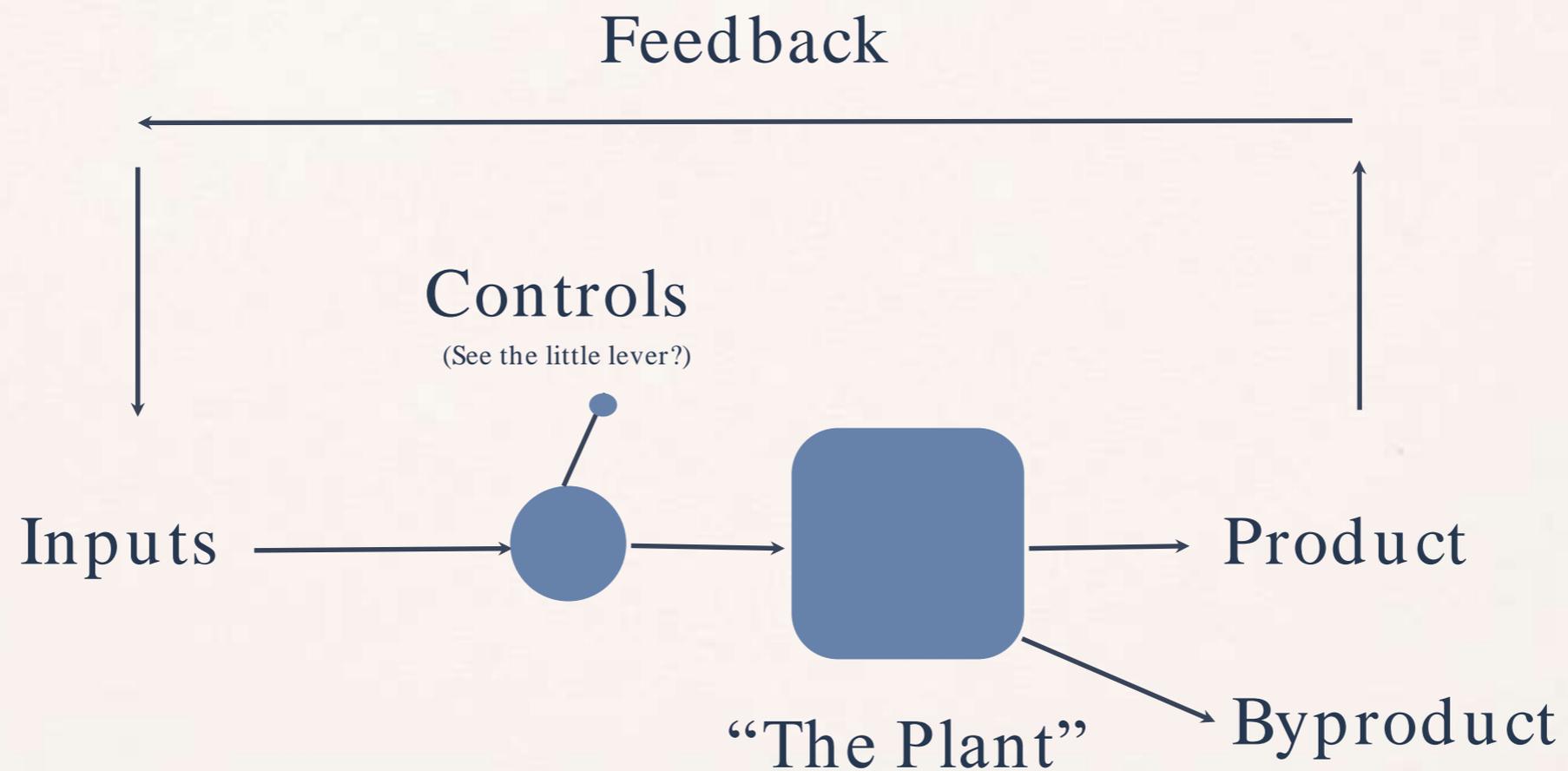
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- ❖ Not a boy band.
- ❖ Not just a great local restoration company.
- ❖ Using the principals of ecology to design novel ecosystems based on parameters and constraints established by stake holders and known site conditions.



# Designing “The Plant”

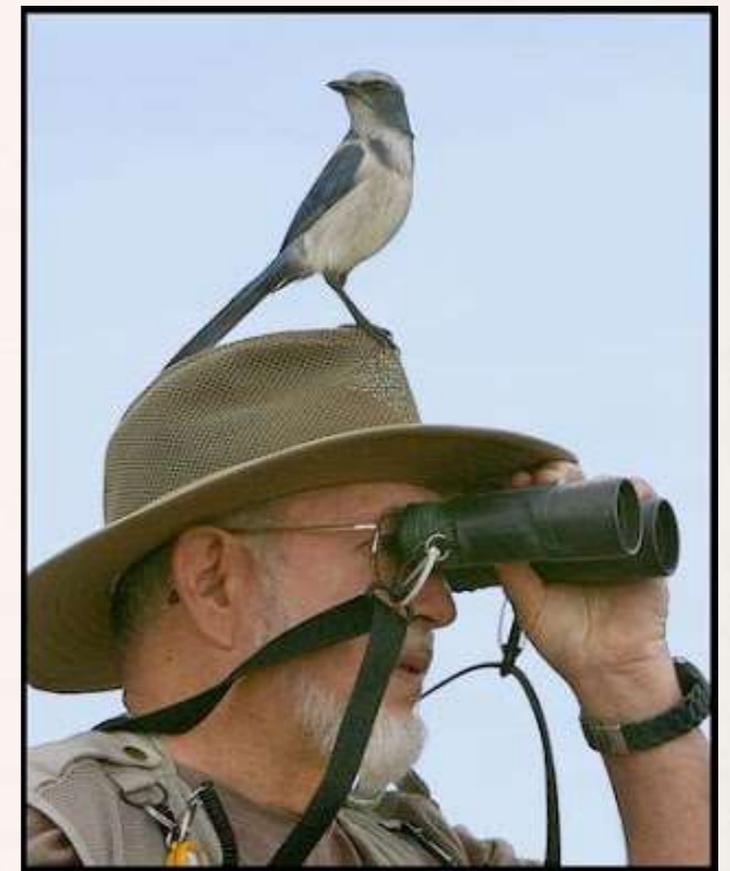
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# Product vs. Byproduct

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- ❖ Monitoring!
- ❖ Product is the target condition.
- ❖ Byproduct is everything else.
- ❖ What do we do with the byproduct?
- ❖ We manipulate the controls to influence feedback and alter trajectory towards a better quality product.



# Reality Check

(Or staying out of the place of blame)

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- ❖ Is there ever a product without a byproduct? (I'm actually really asking this isn't merely rhetorical)
- ❖ Many byproducts in restoration are unanticipated despite thorough pre-construction analysis, modeling, reference etc...
- ❖ Often times we need to go WAY off script ("where am I going to find funding for this?") to pursue project goals.
- ❖ Don't place blame. Don't shame your collaborators. Calmly take stock and modify your plan.

# Case Studies

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- ❖ “I can honestly say every restoration project I have ever been a part of needed some kind of modification to either the installation plan or the long term maintenance strategy. Except the ones that didn’t have either.” - Justin Howell
- ❖ “Ecosystems are living things. They are in too much of a hurry to wait around for you to make up your mind” - Justin Howell
- ❖ “If you don’t like moving targets I suggest you give up ecological restoration and take up archery” - Justin Howell

# McKenna Preserve - Soils/Conditions

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- ❖ Private homes/ timberland on former Weyerhaeuser production forest.
- ❖ Brush/ invasive control mortality replacement plantings
- ❖ Rocky/ quick soil.
- ❖ Gregarious Megafauna



# Magnuson Wetland - Animals

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- ❖ Large scale constructed wetland
- ❖ Super successful habitat restoration
- ❖ So successful that beavers moved in.



# Cedar River Knotweed - Herbicide

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- ❖ 12 miles, multiple year, knotweed control project.
- ❖ High visibility. Sensitive area.
- ❖ Herbicide injection as main control strategy.
- ❖ Switch to foliar application by year three.

# Arroyos Hills - Pathogens

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- ❖ Steep Bluff, sandy soils.
- ❖ Half mature madrone forest  
half Scotch broom
- ❖ Scared out of our wits by  
madrone blight.
- ❖ Instituted rigorous sanitation  
protocols. Scrub in/ scrub out.

# Madrona Landslide - Materials

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- ❖ Multi parcel landslide mitigation
- ❖ Four separate land owners
- ❖ Plastic sheeting specification
- ❖ Variance granted for use of natural materials and replanting.
- ❖ 50% less expensive.

# Thank You!

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The Beaver of Dam-o-clese

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