# Collaborative Restoration Workshop
# National Forest Foundation | April 2016

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## Planning | Innovative New Tools for Planning & Prioritization at Different Scales

## Key Topics: Modeling and GIS, Cross-Boundary Partnership

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**Speakers**

- **David Seesholtz**, Research Liaison, Pacific Northwest Research Station, U.S. Forest Service
- **Alan Ager**, Research Forester, Rocky Mountain Research Station, U.S. Forest Service
- **Rob Campellone**, Landscape Conservation Design Policy Advisor, U.S. Fish & Wildlife Service

**Overview**

This session introduced innovative and emerging tools to prioritize and plan restoration projects, including: Integrated Landscape Analysis Program (ILAP), production possibility frontiers, and new planning strategies for landscape conservation design.

**David Seesholtz – Integrated Landscape Analysis Program (ILAP)**

Resource managers, policy makers, and stakeholders are increasingly trying to collaborate across boundaries to achieve broad landscape goals. These efforts require an understanding of how alternative management approaches might interact with natural disturbances and other drivers to accomplish landscape restoration. The Integrated Landscape Assessment Program (ILAP) produces information, maps, and models to help land managers, policymakers, and others conduct mid- to broad-scale (e.g., watersheds to states and larger areas) prioritization of land management actions, perform landscape assessments, and estimate cumulative effects of management actions for planning and other purposes. ILAP has recently been updated to support project level planning, and can be used for National Environmental Policy Act (NEPA) analysis (i.e., to analyze wildlife habitat) at finer scales. In the future, ILAP may expand to areas, including forest plan revisions and "pay to play" arrangements.

State-and-transition models cover all major upland vegetation types in a four state area (Arizona, New Mexico, Oregon, and Washington), and integrate vegetation development, management actions, and natural disturbances to allow users to examine the mid- and long-term effects of alternative management and disturbance scenarios. New linkages to wildlife habitat, economics, aboveground carbon pools, biomass, and wildfire hazard have been developed and integrated through decision-support systems.

**Alan Ager – Using Production Possibility Frontiers (PPF) to identify Tradeoffs**

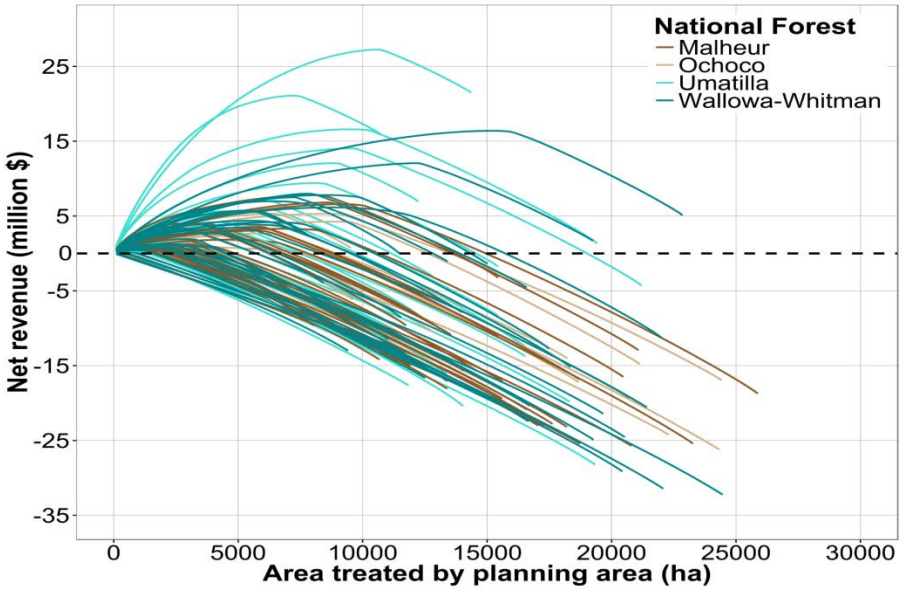
The broad mix of socioeconomic and ecological goals of federal forest restoration programs creates a complex prioritization problem for land managers. Restoration programs in non-forest ecosystems face a similar challenge where finite resources need to be allocated to most efficiently meet long-term goals. One way of prioritizing projects involves the use of production possibility frontiers (PPF).

A production possibility frontier (PPF) is a standard mathematical tool in economics. A PPF is a graphical representation (as a curve) depicting all maximum output possibilities for two goods, given a set of inputs consisting of resources and other factors. In the case of forest restoration, the goods compared are the diverse goals of restoration projects, e.g., WUI risk reduction versus merchantable timber, or cumulative revenue versus the total forest area treated. PPFs can help land managers and stakeholders identify the tradeoffs and understand the cost associated with particular ecological versus

socioeconomic priorities. Production frontiers can also be used to analyze the efficacy of current restoration efforts.

Example PPF:

- Planning areas are optimized for revenue under a range of treatment intensities
- As stands are added to the project, revenue peaks then declines




The results of this research on the national forests in the Pacific Northwest can be found in the articles listed under resources. The research illustrated unique restoration storylines for individual national forests. These PPF results could be combined with stakeholder preference surveys to find socially optimal and economically efficient pathways to achieve efficient long-term forest restoration goals.

Benefits of using PPFs:

- Shows that tradeoffs between restoration goals can be optimized.
- Facilitates dialog about tradeoffs.
- Allows managers to compare stakeholder preferences with production frontiers.

**Rob Campellone – Landscape Conservation Design using the iCASS Platform**

Science is clear that human activity has led us into a transformational time in Earth's history. The environment is rapidly changing on a global scale. Traditional governance structures and planning processes cannot adequately address many contemporary environmental challenges, especially planning for ecosystem resilience and connectivity in an uncertain future. International agreements and national-level policies call for the development of new approaches that commit to multi-stakeholder planning and coordinated adaptation strategies. In recognition that no single agency or organization is equipped to tackle the breadth of environmental challenges alone, the U.S. Fish and Wildlife Service developed the iCASS Platform to foster transformation and integrated co-governance.

iCASS is an innovative systems platform for implementing landscape conservation design. A full description of the planning platform is forthcoming in *Landscape and Urban Planning* (Campellone et al.). The planning steps are below.

*i = Integrated + Interdisciplinary + Informative + Inclusive + Iterative = Innovation*

*C = Convening Stakeholders*

*A = Assessing Conditions*

*S = Spatial Design*

*S = Strategy Design*

**Lessons**

- Landscape models can inform collaborative group discussions. However, new tools aren't always a good replacement for collaborative deliberation (some fear the models could represent a sort of black box). Modelers struggle the most with creating multiple management scenarios to aid collaborative dialogue; it can be challenging to create three or more scenarios.
- We've been developing maps for a long time. Now we must figure out how we are going to collectively implement what the maps represent.
- New tools and models must incorporate cooperative governance. Other approaches won't work in the future. The whole conversation of prioritization is driven by policy at multiple scales.
- Data must be accompanied by a strategic plan for how we will use the data.
- Many agencies are working on landscape conservation design in a stovepipe. In the nature of effectiveness and efficiency, we should be working together.
- Social learning must support landscape conservation design.

**Resources**

- Integrated Landscape Assessment Program (ILAP) summary
- Landscape Treatment Designer – Overview and Example Application
- Two academic papers on forest restoration Production Possibility Frontiers:
    - Ager, A.A., Day, M, Vogler, K. 2016. Production possibility frontiers reveal socioecological tradeoffs for restoration of fire adapted temperate forests. Journal of Environmental Management 176 (2016) 157-168
    - Vogler, K, Ager, A.A., Day, M. Bailey, J. 2015. Prioritization of forest restoration projects: tradeoffs between wildfire protection, ecological restoration and economic objectives. Forests: 4403-4420