On the frontlines: Integrating ecosystem services into USFS policies and programs from national to local scales

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Ecosystem Services and the USFS

- Ecosystem Services for USFS evolved from the multiple-use concept (MUSYA, 1960)
- USFS Planning Rule & Presidential Memorandum
- Forest scale example of an E.S. framework
- NESST-National Ecosystem Services Strategy Team- Planning, Performance & Partnerships
- Future direction of ecosystem services and USFS
<table>
<thead>
<tr>
<th>Legislation</th>
<th>Intent of Legislation</th>
<th>Federal Agencies</th>
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<tbody>
<tr>
<td>Multiple Use Sustained Yield Act (1960)</td>
<td>Sustainable management of natural resources</td>
<td>USFS and BLM</td>
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<td>National Environmental Policy Act (1969)</td>
<td>Impacts of people and the environment and understanding of the connection between ecological systems and management actions</td>
<td>Any federal project that used federal funding</td>
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<td>National Forest Management Act (1976)</td>
<td>Establishes policy of inventory and planning in accordance with MUSYA</td>
<td>USFS and BLM</td>
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<td>National Forest System Land Management Planning Rule (2012)</td>
<td>USFS regulation to implement planning from NFMA</td>
<td>Rule explicitly requires managers to address ecosystem services in planning</td>
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<td>Presidential Memorandum: Ecosystem Services into Federal Decision Making (2015)</td>
<td>Directs federal agencies to incorporate ES into decision frameworks</td>
<td>NOAA, NRCS, USFWS, USFS, EPA, BLM, USGS</td>
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USFS Planning Rule

- Ecosystem services and multiple uses “considering a full range of resources, uses and benefits”
- MUSYA- timber, water, recreation, range, wildlife & fish.
- Early adopter forests are using Planning Rule for forest plan revisions and assessments.
- 2015 Directives state the N.F. should include “key ecosystem services” in forest plan revisions.
- E.S. also includes cultural heritage values, and other services not directly included in multiple uses.
Incorporating Ecosystem Services into Federal Decision Making

- Directs agencies to develop and institutionalize policies for ecosystem services in planning, investment and regulatory context.
- Each agency developing work plan due March, 2016.
- Implementation guidance, CEQ convening subject matter experts for “community of practice” concept.

NESST- National Ecosystem Services Strategy Team
Forest Scale Example: Ecosystem Services as a Framework for Forest Stewardship
Project Goals

- Articulate the values that the forest provides to the public.
- Evaluate effects between management actions and the sustainable delivery of ecosystem services.
- Build ecosystem services-based partnerships to design and fund needed work on the ground.
- Create analytical tools that allow managers to assess project outcomes and tradeoffs in ecosystem services terms, i.e., across resource areas and over longer time scales.
Some services can be quantified and monetized, while others are described qualitatively.
Who benefits from Forest Service management actions?

Who shares common interests in ecosystem service provision?
Drawing connections between Forest Service management and delivery of ecosystem services

- Restoration of aspen, meadows, marshes, wetlands and stream channels.
- Culvert replacement to facilitate fish passage.
- Tillage treatments to restore soil porosity.
- Road restoration and decommissioning.
- Removal of invasive species.

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<td><strong>Provisioning Services</strong></td>
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| Food (crops, livestock, wild foods, etc…)
| Fiber (timber, cotton/hemp/silk, wood fuel)
| Genetic resources
| Biochemicals, natural medicines, pharmaceuticals
| Fresh water
| **Supporting Services** |
| Nutrient cycling
| Soil formation
| Primary production
| **Regulating Services** |
| Air quality regulation
| Climate regulation (global, regional, and local)
| Water regulation
| Erosion regulation
| Water purification and waste treatment
| Disease regulation
| Pest regulation
| Pollination
| Natural hazard regulation
| **Cultural Services** |
| Aesthetic values
| Spiritual and religious values
| Recreation and ecotourism
The benefits of an ecosystem services approach to management

- An *integrated approach* - allows managers to assess the costs and benefits of projects across resource areas and beyond forest boundaries.

- Creates *awareness* about the services provided by public lands and brings attention to under-valued projects.

- Leverages *partnerships* and funds to implement work needed on the ground.
Using ecosystem services to frame forest management is like going from black and white to color.

~ John Allen, Forest Supervisor, Deschutes National Forest
NESST- National Ecosystem Services Strategy Team

Robert Deal, Nikola Smith, Jonas Epstein, Emily Weidner, Mary Snieckus, Lisa Fong, Tommie Herbert, Tania Ellersick, Greg Arthaud, Claire Harper, many others
The National Ecosystem Services Strategy Team was established to collaboratively develop national strategy and policy around ecosystem services and integrate it into Forest Service programs and operations.”
Nest Report

- Introduction
- Ecosystem Services and USFS
- Elements of an Ecosystem Services Approach
  - Decision-Making and Analysis
  - Measuring, Reporting, Communicating
  - Partnerships and shared investments in ES
- Synthesis
  - Common Needs
- Next Steps

The Opportunities

- **Planning**: Consider a broad suite of ecosystem services in decision-making and priority-setting

- **Performance**: Quantify and communicate in terms of benefits to people through measurement and reporting

- **Partnerships**: Connect providers and beneficiaries of ecosystem services through partnerships and investments
Planning

Considering the full suite of objectives in analysis, decision-making and priority-setting

- Forest Planning
- Project Level Planning
- Prioritizing Restoration Activities
- State Forest Action Plans
Ecosystem Services Identified in Assessments

\[ \text{between 7-22 services per assessment} \]
Increasing focus on **geospatial tools** to quantify benefits delivered to the public

Characterization of threats and **justification** for targeted restoration

National Forest Contributions to Stream Flow
Rocky Mountain Research Station, Luce et al. 2016
State Forest Action Plans

Required under the U.S. Farm Bill

✓ Preserve working forest lands
✓ Protect forests from harm
✓ Enhance public benefits from trees and forests
Performance

Quantifying and communicating the value of resources and impacts of management actions in terms of benefits to people

- National Assessments
- Performance Management
- Inventory Monitoring & Assessment
Performance Reporting

Creating standardized metrics & indicators that enhance national reporting, program management, and encourage third-party investment.
Partnerships

Connecting providers and beneficiaries of ecosystem services through partnerships and shared investments.

- Incentives for Private Landowners
- Partnerships for Shared Investments
- Damage Assessments
- Environmental Markets
From 2004 to 2015, the private sector channeled $8.2 billion of private capital into investments seeking measurable environmental benefits in addition to financial returns.

- Watershed investments
- Compensatory mitigation
- Corporate social responsibility
- Voluntary and regulatory carbon
- Voter initiatives
Private Sector Partnerships: Brewshed Investments
Deschutes National Forest, Oregon

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GREAT BEER begins with CLEAN WATER
Synthesis and Future Direction for NESST

- Moving from policy issues at national scales to Forest scale application of ecosystem services concepts.

- Additional examples of how Forests will be applying ecosystem services (e.g. USFS Planning Rule).

- Applications of ecosystem services at project scales.

- NESST team involved in trainings, workshops and webinars to get expertise out to the field.
Take-Home Messages

- Ecosystem services science can help analyze tradeoffs between management decisions, and assess public benefits at landscape scale.

- Ecosystem services tools and methodologies can help quantify and communicate the impacts of Forest Service management.

- Ecosystem services and concepts can help build partnerships that connect providers and beneficiaries, and invite diverse stakeholders to share in the agency mission.