Win-Win Restoration: Investing in Carbon Sequestration

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Summary

- Relationship between ecosystem services, human uses and economic values
- Defining win-win restoration
- Incentives for investing in carbon sequestration
  - Mission
  - Expertise
  - Markets

Ecosystem Services, Uses and Values

While there may not be a universally accepted definition of ecosystem services across disciplines, ecologists' general classification aligns with the economic concepts of use and non-use values:

- **Provisioning services, e.g., goods produced like food, timber, fuel, water (i.e., commodities)**
- **Regulating services, e.g., flood and disease control, carbon sequestration**
- **Cultural services, e.g., spiritual, intellectual, recreational, cultural benefits**
- **Supporting services, e.g., nutrient cycling, soil formation**

- **Direct use involves human physical involvement with natural resources (e.g., logging, fishing, cultural, and tourism)**
- **Indirect use values resources that support humans or what humans directly use, e.g., climate regulation, flood control, animal/fish refugia, pollination, waste assimilation**
- **Non-use does not involve physical interaction (i.e., bequest and option values)**

What is Win-Win Restoration?

Telling a complete story about the benefits of NRDAR:

Restored Ecosystems

Restored Recreation

Restored Cultural Services

Restored Commercial Activity, New Opportunities

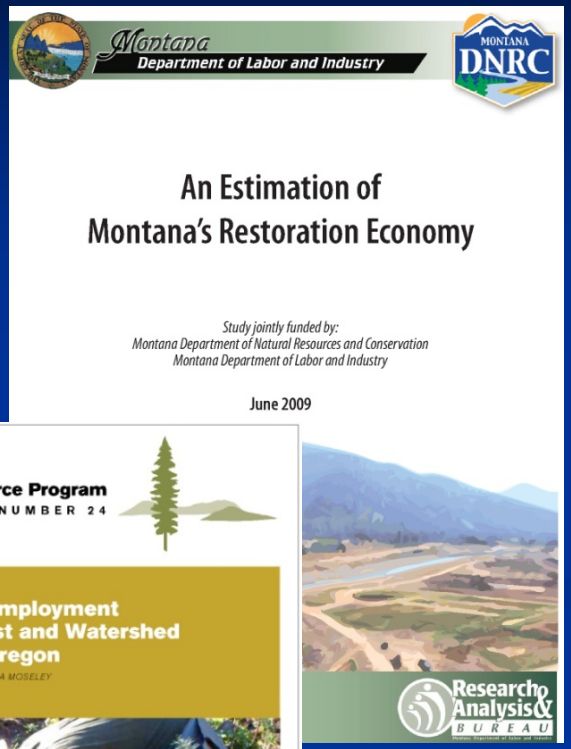
Economic Impacts/Contribution

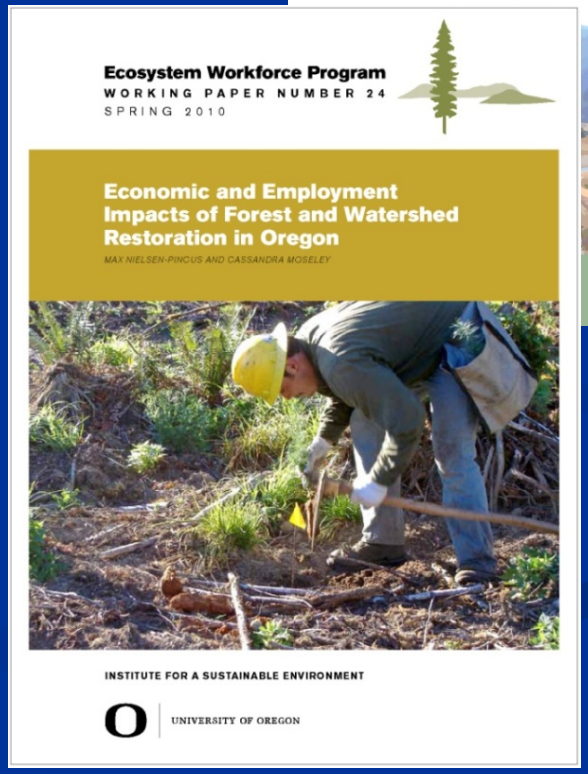
Sequestration Values

Jobs, including Youth Opportunities

The Restoration Economy: Jobs

- **Job creation potential generally ranges between 11 and 21 jobs per $1 million of restoration investment, depending on the type of activity.**
  - **Montana:** 31.5 jobs are created per $1M spent on mining reclamation work.
  - **Oregon:** 14.7 jobs per $1M invested in in-stream projects to 21.1 jobs per $1M invested in riparian projects.
  - **Humboldt County, CA:** 14.5 local, fulltime jobs per $1M invested in aquatic, riparian, and road restoration.
  - **DOI:** In 2010, average of 20.7 jobs per $1M for select restoration activities.





The Restoration Economy: Economic Contribution and Impact Analyses

- **A variety of economic analyses can be legitimately conducted to tell a win-win story – benefit-cost analysis, impact analysis, and contribution analysis – but need to be clear on the context and use.**

Estimated Benefits from a Wild Salmon Restoration Project

Estimate A: $544M	Estimate B: $7M
Increased economic activity in the surrounding area from increased fishing and recreational use. **Economic Contribution** often mislabeled as an "economic impact"	Increase economic activity in the surrounding area, but some comes at the expense of trout fishing and spending in nearby areas. **Economic Impact Analysis**

- **For Feds: Any economic activity that comes at the expense of others is an economic transfer, not new economic benefit.**

The Restoration Economy: Investing in Carbon Sequestration

<u>Assertion</u>: Investing in NRDA restoration projects that provide cumulative ecosystem services, like the regulating service of carbon sequestration, could increase the value of the project to trustees, the public, and the RP.

Not asserting that NRDAR cases should explicitly include carbon sequestration services as an injury category.

<u>Objective</u>: Need relatively reliable, low-cost methods to quantify and monitor carbon sequestration from NRDA restoration projects.

Incentives for Investing in Carbon Sequestration: Mission

- Congress (recent House votes)
- Interior: Commitment through Secretarial Orders, Strategic Plan, and implementation efforts

Glacier near Seward, Alaska

STRATEGY #3

Assess and forecast climate change and its effects.

The extent to which U.S. communities and ecosystems may be affected by climate change will depend on the nature of the impacts and the sensitivity of the ecosystem to the changes. Successful adaptation to climate change will depend on access to a variety of options for effective management responses. The Department will support research and monitoring initiatives of carbon, nitrogen, and water cycles, and their effects on ecosystems. The USGS will provide tools for managers to develop, implement, and test adaptive strategies, reduce risk, and increase the potential for ecological systems to be self-sustaining, resilient, and adaptable to environmental changes. Interior also considers the application of traditional knowledge when making decisions affecting tribal communities.

The USGS will, through its existing scientific assets and the new DOI Landscape Conservation Cooperatives and Climate Science Centers, implement partner-driven science to improve understanding of past and present land use change, develop relevant climate and land use forecasts, and identify lands, resources, and communities that are most vulnerable to adverse impacts of change from the local to global scale.

ORDER NO. 3289

Subject: Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources

Sec. 1 **Purpose and Background**. Secretarial Order No. 3285, issued on March 11, 2009, made production and transmission of renewable energy on public lands a priority for the Department. This Order establishes a Department-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to its impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources that the Department manages.

Press Release

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Interior Department Invites Proposals for Northeast, South Central and Pacific Climate Science Centers

02/28/2011

Contact: Joan Moody (DOI) 202-208-6416

The Department of the Interior today invited proposals on grants.gov to host DOI Climate Science Centers (CSCs) in the Northeast, South Central, and Pacific regions. These CSCs are the last three in a network of eight existing or planned centers around the nation that will serve as regional hubs of the National Climate Change and Wildlife Science Center.

The CSCs will provide managers of natural, cultural and historic resources with the information and tools they need to plan for the challenges posed by climate change and other landscape-scale stressors -- including fire, invasive species and changing land use. Interior has established centers in the Northwest, Alaska, and Southeast, and has announced plans for CSCs in the North Central and Southwest regions in partnership with universities.

Incentives for Investing in Carbon Sequestration: Expertise

- Examples of applied sequestration restoration projects:
  - Nez Perce Tribe's carbon portfolio
  - FWS afforestation in lower Mississippi River Valley
  - NPS demonstration carbon sequestration projects
  - BLM Great Basin Restoration Initiative (sagebrush)
  - FWS wetland restoration as offset for a concentrated animal feeding operation (CAFO, chickens)
- USGS National Climate Change and Wildlife Science Center (2008); partners w/ USFS, NOAA, DOE, etc.
- New nexus between NRDAR and Fisheries and Habitat Conservation Climate Change Coordinator (representative to the USFWS National Climate Team).

Incentives for Investing in Carbon Sequestration: Market Value

- **Voluntary offset markets**
  - **Chicago Climate Exchange (CCX), a voluntary allowance/offset market, ended 1/31/11; now solely a registry for offset emission credits.**
  - **Environmental Finance: "…our survey [of 500 global carbon market participants] report[s] a pick-up in interest and activity [in voluntary carbon markets], as the economic clouds begin to lift and as North American participants ready themselves for a carbon market in California." February 2011**
  - **Restoration banking (e.g., Duwamish/Harbor Island NRD Bank).**
- **California Cap-and-Trade Program with offsets**
- **Standard & Poor's (S&P) is to begin integrating climate risk into all its corporate bond ratings. The outcome will be a carbon exposure figure expressed in dollars or euros of earnings.**

Additional Information

2009 DOI Economic Impact Report:
http://www.doi.gov/news/pressreleases/2010_02_23_release.cfm
2010 DOI Economic Impact Report will be released soon.

An Estimation of Montana's Restoration Economy:
http://www.ourfactsyourfuture.org/admin/uploadedPublications/3669_Restoration.pdf

The Employment and Economic Impacts of Forest and Watershed Restoration in Oregon: http://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/downloads/BP23.pdf

Nez Perce carbon sequestration efforts: http://tribalclimate.org/PDFsBillings/Pres-Kummet.pdf ;
ttp://www4.nau.edu/tribalclimatechange/tribes/northwest_nezperce.asp

FWS afforestation for carbon sequestration example: http://www.climate-standards.org/projects/files/Tensas_River_Afforestation_PDD_16_Oct.pdf

USGS National Climate Change and Wildlife Science Center:
http://nccwsc.usgs.gov/documents/NCCWSC_FACT_SHEET_NOV2010%20(INFO_sheet112310).pdf