



# Federal Agencies & Ecosystem Services

*Lydia Olander, Duke University, National Ecosystem Services Partnership &  
Nicholas Institute for Environmental Policy Solutions*

**Agricultural Outlook – Arlington VA – February 25, 2016**



# Federal Action

1998

**PCAST report -**

Teaming with Life: Investing in Science to Understand and Use America's Living Capital

2005

Millennium Ecosystem Assessment

2008

**Farm Bill**

Establishment of **USDA Office of Ecosystem Services and Markets**  
**Wetlands Compensatory Mitigation Rule**

2010

**Inter-agency dialogue** on payments and markets for ecosystem services

2011

**PCAST Report -**

Sustaining Environmental Capital: Protecting Society and the Economy

2012

**Forest Service Planning Rule**

International Platform on Biodiversity and Ecosystem Services

2013

**CEQ Principles and Requirements for Federal Investments in Water Resources**

2015

**White House Memo on integrating ES**

**White House Memo on mitigating natural resource impacts**

**White House Research Agenda on ES and coastal green infrastructure**

# WH Memo: ES in Federal Decision Making

White House memorandum calling on Federal agencies to incorporate ecosystem services into Federal decision making requests:

- a description of **current agency practice and work plans** to be submitted to the Council on Environmental Quality (CEQ) no later than **March 30, 2016** and
- plans for **implementation guidance** to be developed in collaboration with the agencies by **November 30<sup>th</sup>, 2016**. (When it will be released for external review)



October 7, 2015

M-16-01

## MEMORANDUM FOR EXECUTIVE DEPARTMENTS AND AGENCIES

**FROM:** Shaun Donovan, Director  
Office of Management and Budget  
Christina Goldfuss, Managing Director  
Council on Environmental Quality  
John Holdren, Director  
Office of Science and Technology Policy

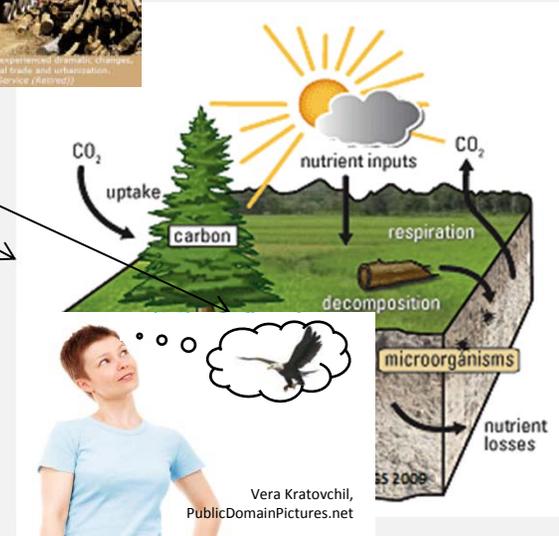
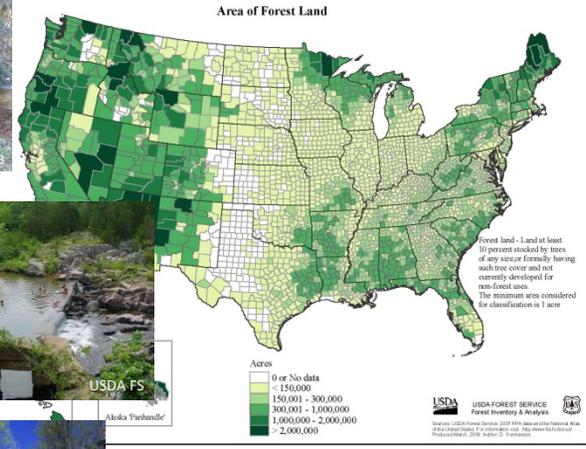
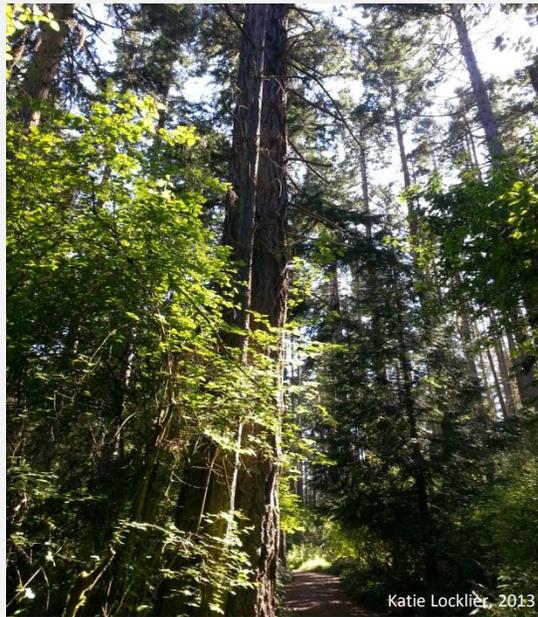
**SUBJECT:** Incorporating Ecosystem Services into Federal Decision Making

**Overview.** Nature provides vital contributions to economic and social well-being that are often not traded in markets or fully considered in decisions. This memorandum provides direction to agencies on incorporating ecosystem services into Federal planning and decision making. (Broadly defined, ecosystem services are the benefits that flow from nature to people, e.g., nature's contributions to the production of food and timber; life-support processes, such as water purification and coastal protection; and life-fulfilling benefits, such as places to recreate.)

Specifically, this memorandum:

- (1) Directs agencies to develop and institutionalize policies to promote consideration of ecosystem services, where appropriate and practicable, in planning, investments, and regulatory contexts. (Consideration of ecosystem services may be accomplished through a range of qualitative and quantitative methods to identify and characterize ecosystem services, affected communities' needs for those services, metrics for changes to those services and, where appropriate, monetary or nonmonetary values for those services.)
- (2) Sets forth the process for development of implementation guidance and directs agencies to implement aforementioned policies and integrate assessments of ecosystem services, at the

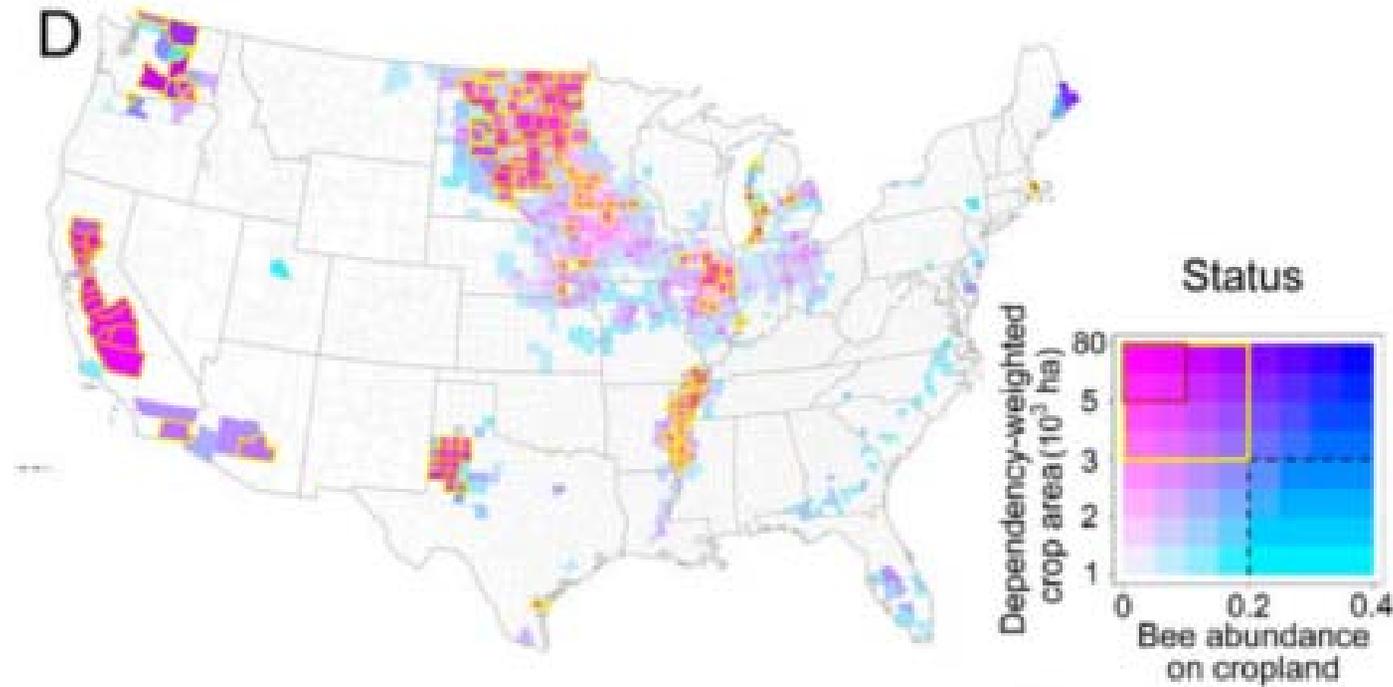
# How is it **different** from what we do now?



# How is it **better** than what we do now?



# Winners and Losers



US Bee abundance relative to pollinator dependent crop area

Koh et al. 2016. *Modeling the status, trends, and impacts of wild bee abundance in the United States.*

# How are ES useful?

Communicating benefits ecosystems provide to people

Constructive engagement of stakeholders before decisions are made

Communicating and explicitly considering trade-offs that involve ecosystem services

More systemic comparison of alternatives (such as greener vs grayer infrastructure options)

Fuller consideration of important but often undervalued benefits

Identification of new partners (PES, markets)

# National Ecosystem Services Partnership (NESP)

*NESP engages both public and private individuals and organizations to **enhance collaboration** within the ecosystem services community and to **strengthen coordination** of policy, market implementation, and research at the national level*

- NESP Community of Practice
- Quarterly newsletter
- Webinars
- FRMES Online guidebook  
[nespguidebook.com](http://nespguidebook.com)
- Best Practice Guidance & Workshops
  - [nicholasinstitute.duke.edu/sites/default/files/publications/es\\_best\\_practices\\_fullpdf\\_0.pdf](http://nicholasinstitute.duke.edu/sites/default/files/publications/es_best_practices_fullpdf_0.pdf)
- Engaged Expert Network

<https://nicholasinstitute.duke.edu/focal-areas/national-ecosystem-services-partnership>

# Primary focus since 2012

Incorporating ES into federal decision making

Help to fill the gap between concept and practice

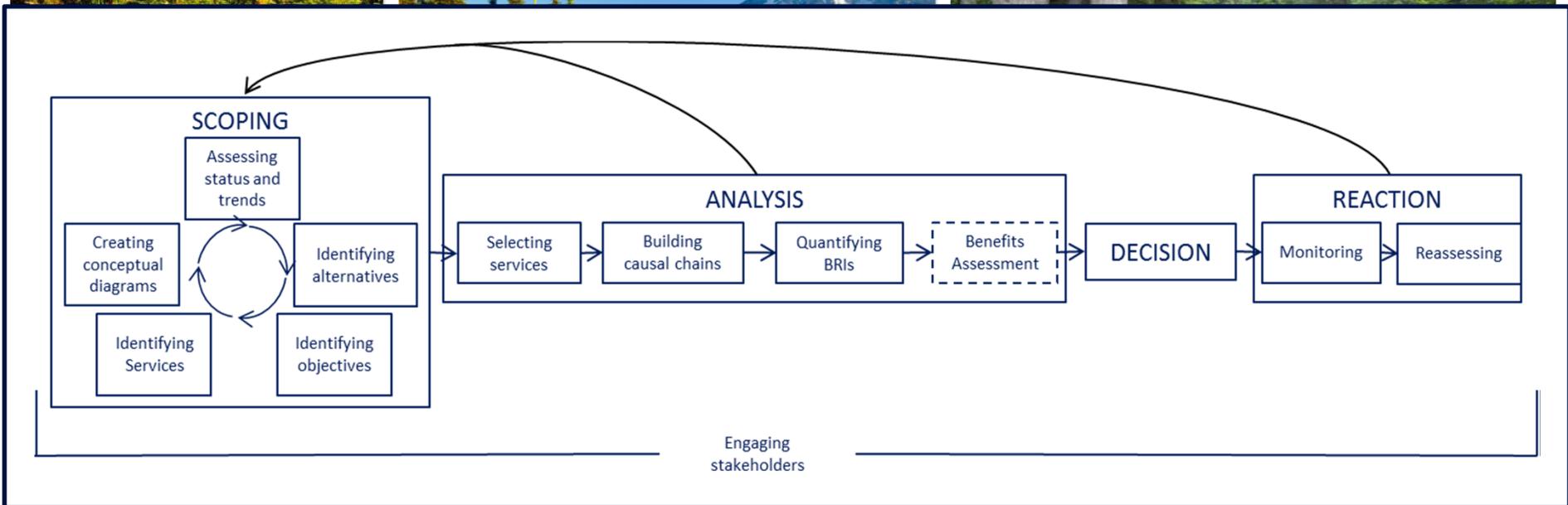
Educate newcomers & managers on the ground

Shared learning across agencies

Connect ecological and social methods for ES evaluation

Common framework that spans decision contexts, geography, and capacity

Bring together agency and academic experts to bring credibility while remaining practical



# THE ASSESSMENT FRAMEWORK for Ecosystem Services

## Methods for connecting ecological and social analyses



[Home](#) - [Resources](#)

## RESOURCES

This section of the *Federal Management and Ecosystem Services Guidebook* provides brief descriptions and links to a number of online resources relevant to implementing an ecosystem services approach. It is updated as new resources become available. The resources highlighted here either complement or supplement this guidebook and the *Best Practices for Integrating Ecosystem Services into Federal Resource Management* paper. This list should not be considered an endorsement of any one tool or resource, but rather a curated collection of available resources.

- [+ Federal Action on Ecosystem Services](#)
- [+ Best Practices for Integrating Ecosystem Services into Resource Management](#)
- [+ EnviroAtlas](#)
- [+ A Review of Ecosystem Service Analytical Tools](#)
- [+ Video Series on Ecosystem Services Valuation](#)
- [+ State Level Ecosystem Services Assessments](#)
- [+ NESP Meetings and Webinars](#)

# Over 150 People Participated

## Project Leads

Lydia Olander, Dean Urban, Tim Profeta (*Duke University*)  
Lynn Scarlett (*The Nature Conservancy*)  
Jim Boyd (*Resources for the Future*)  
Sally Collins (*Consultant, Formerly USFS and USDA OEM*)

## Funders

### Gordon and Betty Moore Foundation

National Center for Ecological Analysis and Synthesis  
National Socio-Environmental Synthesis Center  
Duke University  
USDA Office of Environmental Markets  
Seed funding from several agencies

## Universities & Consultants

Clark University  
Colorado State University  
Duke University  
University of Maryland  
Ohio University  
University of Wisconsin  
Vanderbilt University  
The New School  
Institute for Natural Resources  
Parametrix  
Spatial Informatics Group

## Agency Partners

U.S. Forest Service  
U.S. Bureau of Land Management  
U.S. Fish and Wildlife Service  
U.S. Geological Survey  
U.S. Department of the Interior  
U.S. Environmental Protection Agency  
National Oceanic and Atmospheric Administration  
U.S. Army Corps of Engineers

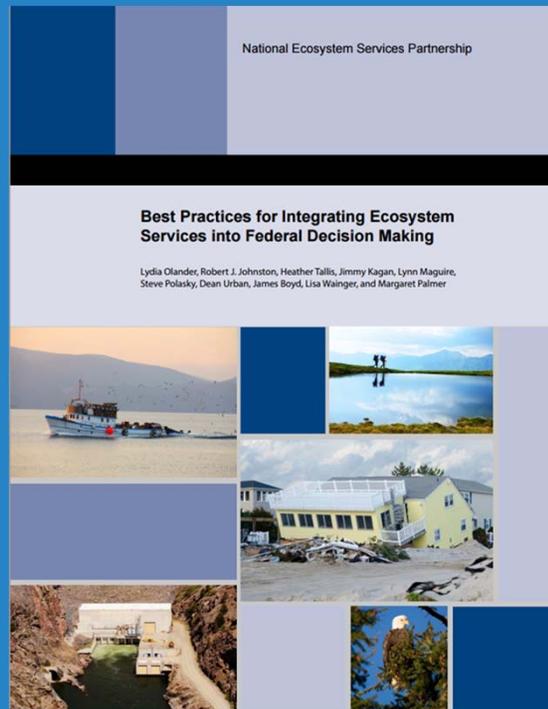
## Agency Observers

Council on Environmental Quality  
Office of Science and Technology Policy  
Office of Management and Budget  
USDA Office of Environmental Markets  
U.S. Department of State

## NGOs

Compass  
Defenders of Wildlife  
Conservation Science Partners  
NatureServe  
Resources for the Future  
The Nature Conservancy  
United Nations Environment Programme

# Best Practices for Integrating ES into Federal Decision Making



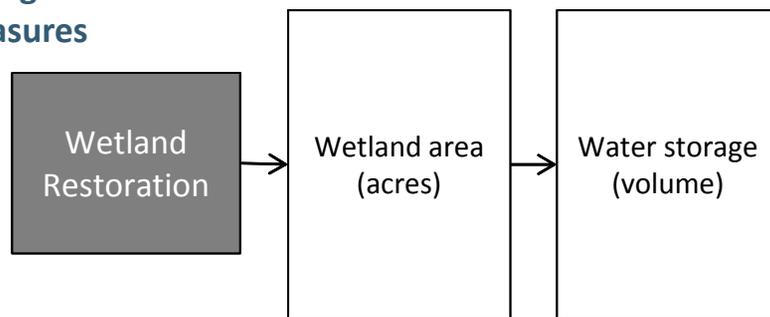
What does this look like in practice?

If we can't or don't want to put a dollar value on everything, what do we do?

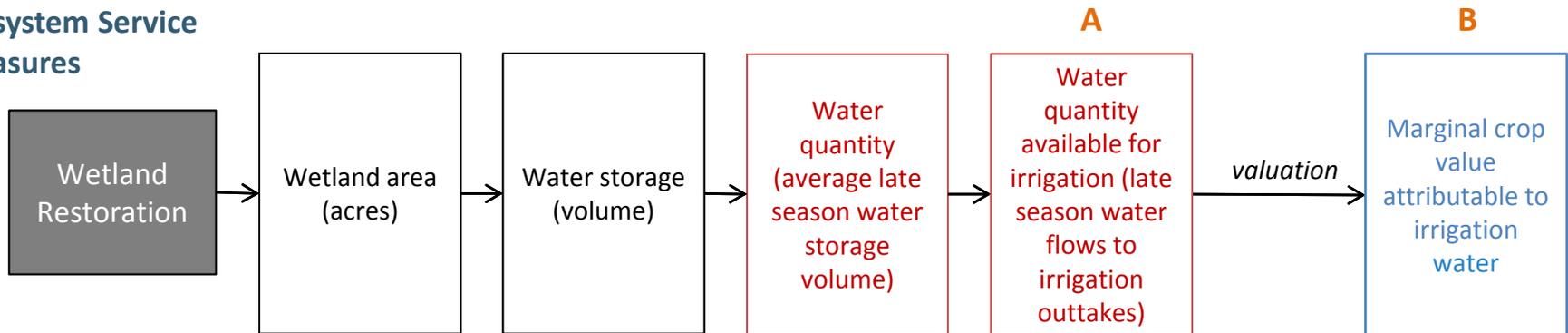
# Connection to nature to people

1. Draw a picture connecting nature to people
2. Quantify the service (late season water) provide by nature (restored wetlands)
3. Quantify the potential demand/value for the service (how much irrigated cropping land with access could use water)

## Ecological Measures



## Ecosystem Service Measures



# USDA and USFS

## Ecosystem services being considered in...

1. Forest-level planning (2012 Planning Rule)
2. Project-level NEPA decisions to compare management alternatives
3. State-level assessments and valuation of forest ecosystem services under different future scenarios
4. USDA quantifying ES benefits of conservation programs
5. Exploring public-private partnerships



# Other agencies using ES

FWS – for improving decisions, enhance support for conservation related actions and identify non-traditional sources of funding

BLM – for land use planning and permitting and leasing conditions

NOAA – assess broader benefits of fisheries and enhancing holistic management of coastal resources

USACE – assessing how ES can integrate into corps operations, restoration, operations and maintenance, green coastal infrastructure

EPA & USGS – developing and testing tools and resources to support the use of ES in decision making

EPA & NPS – assessing the ecosystem mediated affects of air pollution on people

“Integrating ecosystem services into planning and decision-making can lead to better outcomes, fewer unintended consequences, and more efficient use of taxpayer dollars and other resources.”

White House BLOG Oct 7, 2015

How?

Make the business case for investment through federal programs (e.g., conservation programs) or private markets (e.g., PWS).

Target investment to greatest demand or value

Provide a fuller assessment of ROI

Improve communication with and engagement of stakeholders and reduced legal conflict

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END

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Full Chain Diagram

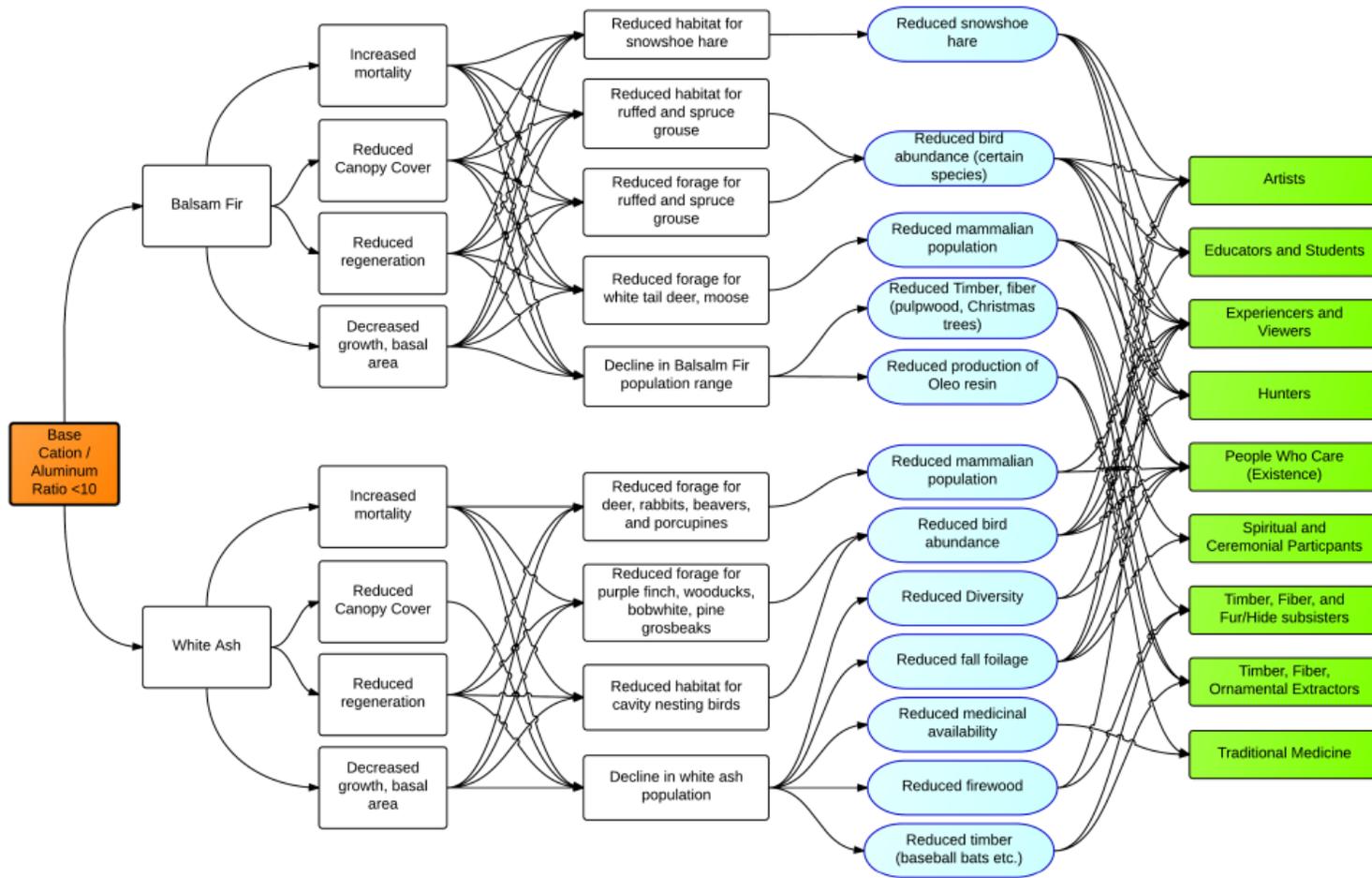


Figure 23. All links between FECS and their beneficiaries for ecosystem process impacted by terrestrial acidification. Ecosystem production functions are based on the change in growth of balsam fir and white ash.