Evaluating ecosystem goods and services in National Forest planning: balancing rigor and efficacy

Jeff Kline
USDA Forest Service

USDA
United States Department of Agriculture

Co-authors

Chris Miller
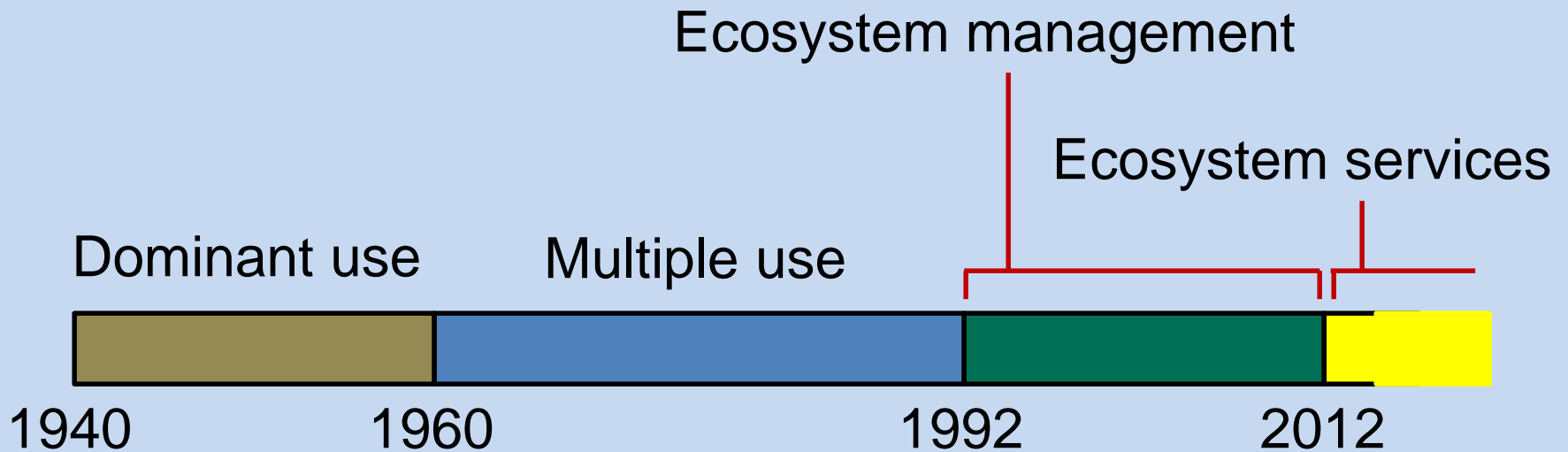Kawa Ng
Delilah Jaworski
USDA Forest Service

Mike Retzlaff
Economic Insights
of Colorado LLC.

United States Department of Agriculture

Forest Service management paradigms, World War II to present

2012 Planning Rule
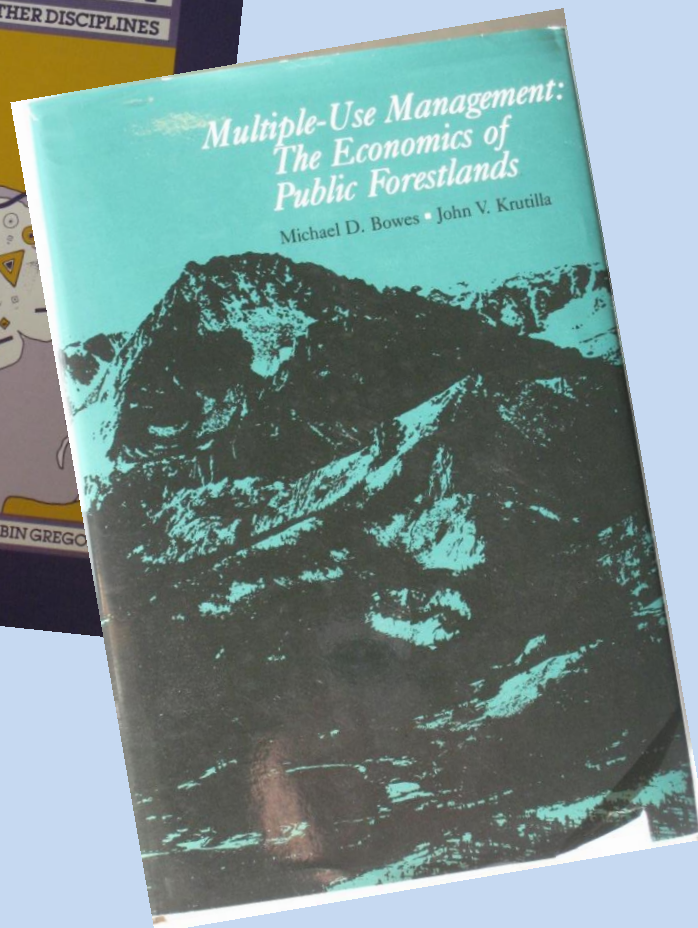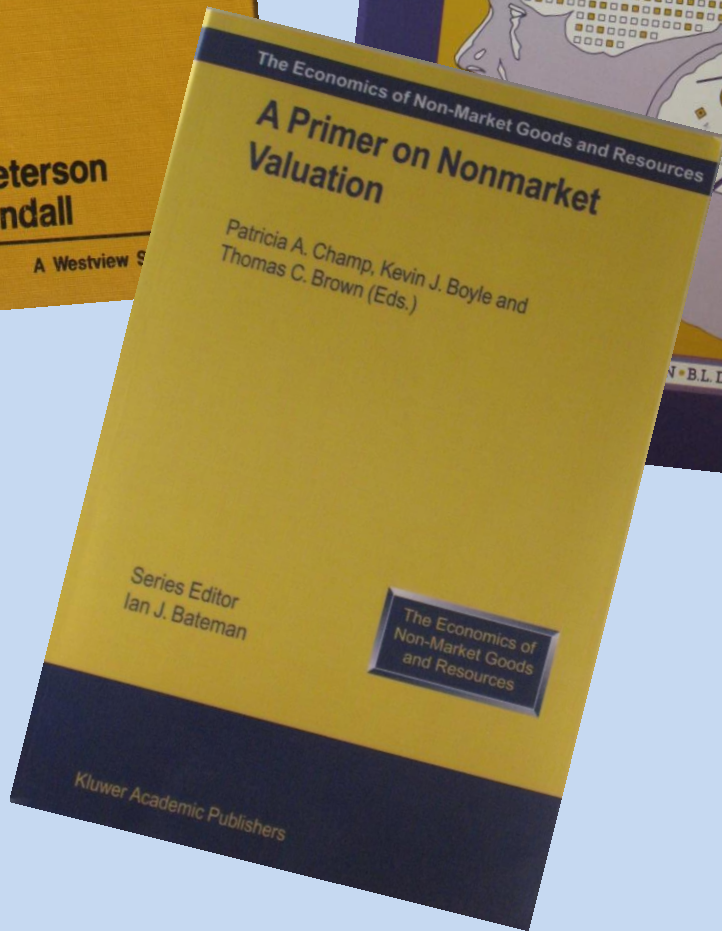
- **36 CFR 219.1 Purpose and applicability**

*"(c) . . . plans will guide management of NFS lands so that they… have the capacity to provide people and communities with **ecosystem services** and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future . . ."*

National Forest work

(1) Initial assessments to identify key ecosystem services;

(2) Incorporation of ecosystem services into forest plans and NEPA analyses;

(3) Monitoring of ecosystem services outcomes resulting from plans.

Valuation
of Wildland
Resource Benefits

edited by
George L. Peterson
and Alan Randall

A Westview S

AMENITY
RESOURCE
VALUATION
INTEGRATING ECONOMICS WITH OTHER DISCIPLINES

B.L. DRIVER • ROBIN GREGO

The Economics of Non-Market Goods and Resources

A Primer on Nonmarket
Valuation

Patricia A. Champ, Kevin J. Boyle and
Thomas C. Brown (Eds.)

Series Editor
Ian J. Bateman

The Economics of
Non-Market Goods
and Resources

Kluwer Academic Publishers

Multiple-Use Management:
The Economics of
Public Forestlands

Michael D. Bowes • John V. Krutilla

Some basic realities

1. Lack of adequate ecological information (production functions)

2. Lack of adequate economics expertise among Agency staff

3. Production targets and staffing structure impede integrative approach.
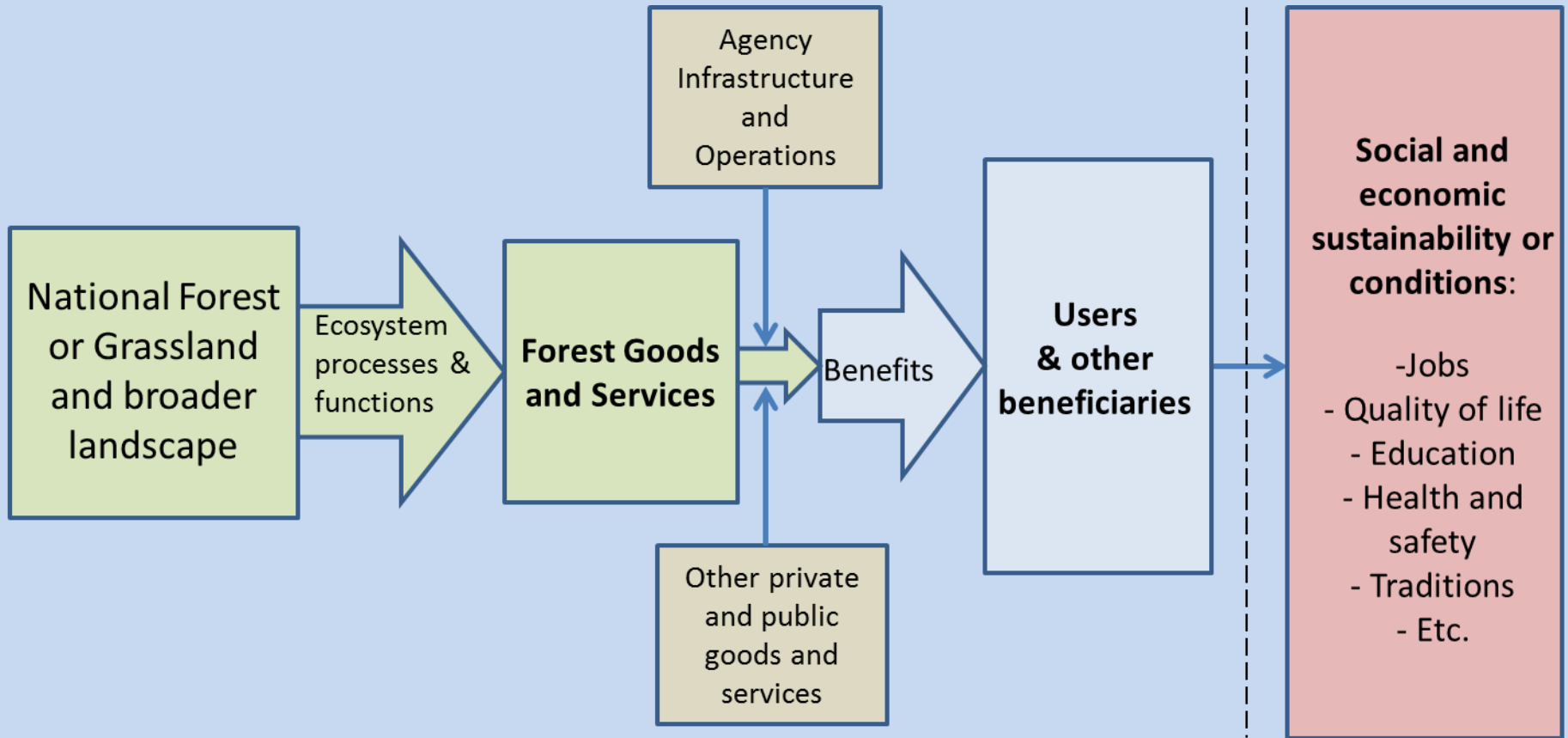
4. National Forest autonomy

Goals

1. Consistency with economic principles

2. Ease of implementation
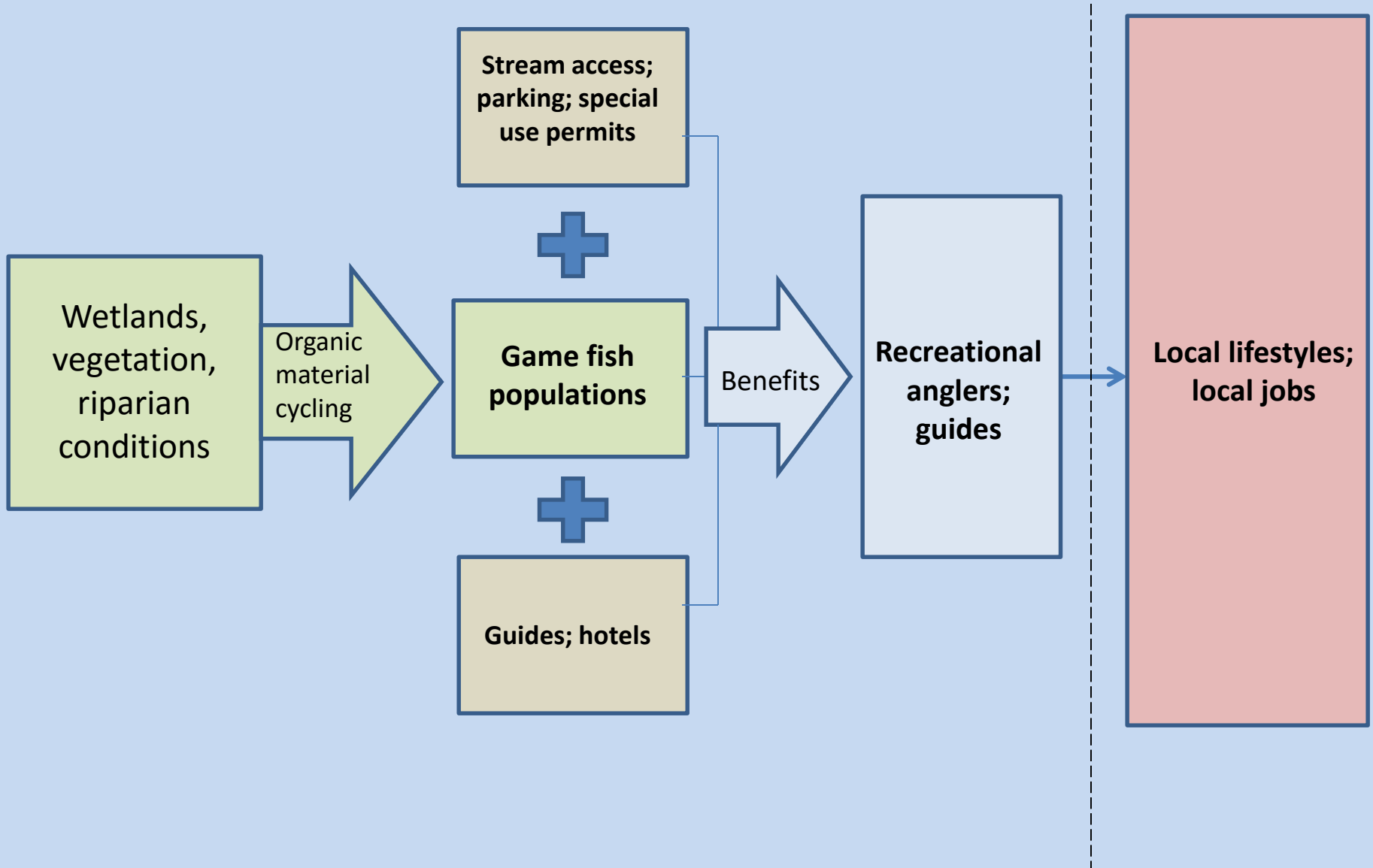
3. Transparency, accessibility to the public

Conceptual framework

Example: Recreational Fishers – Fish Populations

Assessment Steps

1. Develop common understanding of how people benefit from forests and grasslands

2. Identify the beneficiaries that are influenced by forest goods and services of the plan area

3. Refine list to focus on "key" forest goods and services and beneficiaries

4. Identify available information

5. Draft assessment section(s)

Step 1. Develop common understanding of how people benefit

- Why is your resource area important to the public?

  - Who cares about your resource area?

  - Who interacts with your resource?

Step 2. Identify beneficiaries

- Focus on pairs of services and beneficiaries.

- From what resources, features, or characteristics do they benefit?

- Who interacts with or experiences these benefits?

Step 3. Which are "key" goods, services, or beneficiaries?

- Importance beyond plan area

  and

- Likely to be affected by the plan

Step 4. Identify available information

- Document known sources of data.

- Identify level of good or service Forest currently is providing.

- Identify data and indicators that can be used to quantify changes in availability or demand?

Step 5. Draft assessment

- Individual specialists draft portions relevant to their resource areas.

- Discretion on how the assessment (for ES) is organized
  - Stand-alone chapter
  - Integrated throughout
  - Mixed approach

Example spreadsheet

Step 2 - Beneficiaries, goods, and services [See "Starter list" tab for help]					Step 3 - Key?	Step 4 - Indicators	
Beneficiaries (People)	**Forest Goods and Services**	**Infrastructures, operations and other services**	**Ecosystem Processes, Functions, Structure, or Conditions**	**Importance of Forest Good or Service to Beneficiary**	**Key Forest Good or Service Identification**	**Beneficiary Indicators and Measures**	**Forest Good or Service Indicators and Measures**
Who interacts with or experiences and therefore benefits from the forest good or service?	What forest resource, characteristic, or feature (e.g., provisioning or cultural service) do they benefit from?	What infrastructure, operations, and services provided or permitted by the agency enable benefits?	How do the ecosystem processes and functions provide a foundation for the forest good or service?	Why do the beneficiaries care about the forest good or service?	Is it (1) Important outside the plan area and (2) likely to be influenced by management plan? [see process instructions for details]	What indicators and measures describe use or desire among beneficiaries for the forest good or service? Provide data source or "unknown" for each indicator.	What indicators and measures describe the availability of the forest good or service? Provide data source or "unknown" for each indicator.
Cultural /spiritual /ceremonial /sense-of-place participants and groups	forest features	roads		Natural/geologic sites on the forest maintain traditions and spiritual awareness	Yes	Tribal population trends	Number of pristine or undamaged sites trends
Other resource - dependent businesses and customers (e.g., marinas / resorts)	Non-timber products	access, permits	wildfire, forest health/insect and disease regulation	Income and revenue for local residents	No		
Recreational hunters	Big game	roads, trailheads	habitat connectivity	Local and non-local visitors benefit from hunting quality and access	Yes	Number of hunter visits per year	Game populations; habitat; hunting permit applications
Recreational gatherers / pickers	berries, mushrooms	trails, permits, parking	regulation of invasives	Maintains traditional lifestyle benefits for local and non-local residents	Uncertain	Number of visitors; number of guides trends	non-timber product habitat (aggregate spatial layers)

Moving forward

1. Develop reasonable expectations about what information is necessary;

2. Seek to develop information that is sufficient, if not necessarily perfect;

3. Consider qualitative approaches when quantitative approaches may be infeasible;

4. Involve the relevant public who benefits.

Typology specificity spectrum based on intended uses

Advocate ecosystem protection

Establish compensation mechanisms

Evaluate management consequences

Establish ecosystem services markets

Cost-benefit analysis

Green GDP

Increasing need for typology specificity