Integrating Adaptive Management and Ecosystem Services Approaches to Improve Natural Resource Management

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Acknowledgements

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Objective of partnership/talk

• How can integration of adaptive management and ecosystem services concepts
  1) improve the outcomes of management?
  2) advance understanding of ecosystem service identification, production, and valuation?

• What does this integration look like?

• What are barriers/challenges to integration?

• When will this approach provide the greatest payoffs?
Need for better science integration

Background for natural resource management decision-making:

- broad-scale ecosystem processes
- large spatial areas
- complex interactions
- competing stakeholder interests
- highly uncertain outcomes
- rapidly changing climate

→ Increasing need for natural and social science information
Integration:

Adaptive Management
(Managing under uncertainty)

Ecosystem Services
(Integrating human and natural systems)

Complementary approaches?
Rationale (A natural fit):

1) Management decisions that affect natural resources also affect ecosystem services

   Important to consider ecosystem services

2) Effects of management on ecosystem services are uncertain AND Adaptive management is a strategy to improve outcomes in presence of uncertainty

   Adaptive management may improve management of ecosystem services
Integration:

Adaptive Management (AM)
(Managing under uncertainty)

Ecosystem Services (ES)
(Integrating human and natural systems)
Bringing ES into AM:

Deliberative phase
Management framework
- Stakeholder involvement
- Objective(s)
- Management alternatives
- Predictive models
- Monitoring protocols and plans

Iterative phase
Technical learning sequence
- decision making
- monitoring
- assessment

Institutional Learning

Ecosystem Services
- Identification
- Production
- Valuation
Bringing ES into AM: Benefits

Potentially better outcomes, because:

1) More complete set of objectives considered, including impacts beyond management site

2) May improve stakeholder engagement and clarify tradeoffs by
   • providing meaningful metrics
   • promoting transparency
Bringing AM into ES:

Ecosystem Services Analysis:

- Policy Intervention
- Biophysical Changes
- Changes in Biophysical Endpoints
- Change in Value of Ecosystem Services

Direct Management Effect

Biophysical Production Process

Economic Production Process

Adaptive Management
Potentially better outcomes, because:

1) Update management based on learning about all parts of the system -- including about human response to policies

2) Stakeholder engagement may broaden ES and management approaches considered

3) Facilitates learning that can be applied to other systems – while managing for ES
Large benefits possible, but also challenges

institutional, cultural, and technical challenges faced by the approaches independently

challenges specific to integration
Moving forward:

• Make process as sleek and simple as possible

• Identify/develop on-the-ground examples of integration
  → further develop framework for integration
  → improve understanding of benefits and challenges
  → evaluate when integration will have the greatest payoffs

• Build capacity
Thank You!