SLIDES: Arctic Ecosystem Services Measurement and Modeling Project

Eric Biltonen

Follow this and additional works at: https://scholar.law.colorado.edu/best-management-practices-bmps

Part of the Administrative Law Commons, Animal Law Commons, Climate Commons, Energy and Utilities Law Commons, Energy Policy Commons, Environmental Health and Protection Commons, Environmental Law Commons, Environmental Monitoring Commons, Environmental Policy Commons, Natural Resource Economics Commons, Natural Resources and Conservation Commons, Natural Resources Law Commons, Natural Resources Management and Policy Commons, Oil, Gas, and Energy Commons, Oil, Gas, and Mineral Law Commons, Science and Technology Law Commons, State and Local Government Law Commons, Urban Studies and Planning Commons, Water Law Commons, and the Water Resource Management Commons

Citation Information
https://scholar.law.colorado.edu/best-management-practices-bmps/2

Reproduced with permission of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment (formerly the Natural Resources Law Center) at the University of Colorado Law School.
Arctic Ecosystem Services Measurement and Modeling Project

Eric Biltonen, PhD
Environment Economist
Houston Advanced Research Center

Environmentally Friendly Drilling Program Quarterly Meeting:
May 26, 2011
Project Objectives

- To assess and promote ecosystem management tools and metrics that may be used in Arctic marine ecosystems
- To establish a network of researchers for collaboration.
Why?

Business-relevant ecosystem services assessment tools to:

- Understand our dependencies and impacts with respect to ecosystem services in our operating areas.

- Model and evaluate effects of alternative scenarios on ecosystem services.

- Consider our potential impacts in context of other ecosystem stressors (e.g., climate change, other commercial activities).
Research Approach

Measure
- Ecosystem attributes (data)
- Remote Sensing

Analyze/Assess
- Ecosystem functions (relationships)
- Quantification

Evaluate/Predict/Compare
- Ecosystem services (benefits)
- Computation/Modeling

Improved management decisions / healthy ecosystems

Large scale Impact relevant Cost-effective Safe to collect Environmentally-significant Useful for monitoring

Science-based Collaborative Capitalizing on new techniques

Collaborative Operationally-relevant Applicable to adaptive management

Designed for clearer value tradeoffs Robust for risk management Opportunity-focused Integrated with socio-economic elements
Application to the Arctic

- The Arctic represents the intersection of
  - Sensitive environments
  - Strongly coupled socio-ecological systems
  - Rapid change (social, economic, environmental)

- Presents challenges for observing and characterizing the environment
  - High cost and risk of field work
  - Large natural variability and complex feedbacks
  - Vast areas with limited avenues of access

- Range of stakeholders, including communities, have a history of taking active role in environmental management and development issues
Research Approach: Valuation

- Valuation and Scenario Assessment
  - Objective: proof-of-concept for how non-monetary valuation data can be collected, assimilated, and represented in ecosystem service scenario assessments.
  - Requires participation from stakeholders
    - Use participatory modeling approach to develop relative values and priorities (non-monetary valuation) among stakeholder groups related to shoreline stability and primary productivity
    - Relative values elucidated through joint stakeholder scenario development and trade-off analysis

- Outcomes:
  - Assess effectiveness of methodologies
  - Valuation (input) data for building on methods
Next steps

- Consulting with stakeholders
  - Native population
  - Scientists
  - Local government
  - Federal government
  - NGOs
- Incorporate stakeholder input into research approach and future activities
- Case studies to test approach, tools and models
Thank you!

Eric Biltonen, PhD
Environmental Economist
E-mail: ebiltonen@harc.edu