

ESMWG Ecosystem Service Valuation (ESV)

Presentation to the NOAA Science
Advisory Board
April 29, 2016

ESMWG Members on Task Force

- Vic Adamowicz, University of Alberta
- Dave Fluharty, University of Washington
- Robert Johnston, Clark University
- Support from Robert Ellis, Bridget Seegers and Laura Ferguson

Questions / Terms of Reference

- Review the use of ESV within the context of NOAA decision making
- Provide guidance on ESV methods for different types of applications
- Examine the relevance of ESV to different NOAA decision-making contexts
- Examine agency capacity
- Help prioritize ESV application across the agency

Methods

- Review applications of ESV across NOAA and how these were used (or not) to inform decisions
- Review enabling legislation and documents that (1) describe the decision-making contexts within which ESV might play a role, (2) explicitly encourage or restrict ESV, or (3) mandate considerations of economic benefits and costs.
- Semi-structured interviews with NOAA staff involved with the application of ESV across the agency
- The scientific literature describing ESV methods
- Federal guidance related to ESV and economic analysis

Report Structure

1. Executive Summary
2. Objectives / Terms of Reference
3. Methods
4. Overview
5. What are Ecosystem Service Values?
6. When does ESV apply to the decision-making context and when can it be used most productively?
7. The Context for ESV within NOAA
8. Examples of Ecosystem Service Valuation and Decision Making
 - a. Klamath Dam Removal
 - b. Fish Stock Rebuilding
 - c. Coastal Habitat Restoration
 - d. Green Infrastructure
9. Best Practices in ESV
10. Capacity for ESV within NOAA
11. Potential Future Applications of ESV within NOAA
12. Areas of Tension
13. Conclusions / Recommendations: What Should NOAA do?

RELEVANCE OF ESV TO NOAA

- State of the art methods for examining trade-offs developed in academia and in agency practice allow for valuation that includes market and non-market values in decision making.
- Ecosystem services and their valuation build off of evolution of non-market valuation methods developed in NOAA and other agencies (Lipton et al. 2014; Scarlett and Boyd 2011).
- Valuation should be considered alongside other information on ecosystem services.

RELEVANCE OF ESV TO NOAA

Is there an enforceable mandate to employ ESV?

- NOAA is generally permitted / encouraged to apply ESV but not required to do so.
- Decision making under NOAA's [Mandates, ESA, MMPA, MSA, CZMA, NMSA, etc.] and other requirements, [NEPA, APA, RegFlex etc.] can benefit from appropriate application of ESV.
- Only with respect to parts of ESA and MMPA is there an enforceable requirement that NOAA not employ ESV.

RELEVANCE OF ESV TO NOAA

- There is strong encouragement to employ ESV from the Office of Management and Budget, Presidential Executive Orders and others culminating in the Joint OMB/CEQ/OSTP Memorandum (M-16-10) “Incorporating Ecosystem Services into Federal Decision-Making” (October 7, 2015).
- NOAA’s commitment to use of Best Available Scientific Information (NOAA Administrative Order (NAO) 202-735D: Scientific Integrity can be interpreted to require use of ESV when appropriate in decision making (March 7, 2009).

Key Findings

- NOAA has internal capacity for high-quality ESV in a few targeted areas (e.g., fisheries), but not across the agency as a whole.
 - Reliance on one-off, isolated studies—while useful to inform (or highlight the value of) NOAA activities in specific cases—is unlikely to have a broad influence on the way NOAA approaches its mission.
 - Highlighting individual ESV success stories obscures the fact that comprehensive ESV is uncommon.
 - Lack of capacity (e.g., in social science) precludes comprehensive, ongoing applications.

Key Findings

- The impact of federal mandates to incorporate ecosystem services information “where appropriate” is diminished by decision-making contexts which restrict the role of ESV.
 - There are tensions (e.g., legal, scale) between ESV and many NOAA decision-making contexts.
 - Capacity to use ESV to meet extant Line Office mandates determines relevance.
 - There is a need to clarify when and how ESV is relevant to specific decisions (and when not), and to reconcile decision contexts with the information provided by ESV.
 - Ideally, ESV should be implemented in a way that is organic and central to NOAA’s mission.

Key Findings

- Awareness is needed within NOAA on the validity and accuracy of different methods for ESV, as related to decision-making needs.
- The perceived validity of ESV methods within NOAA does not always reconcile with validity as evaluated by the scientific community.
- This distinction is particularly relevant for methods such as stated preference valuation and different benefit transfer methods.

Key Findings

- There is a need to better recognize the distinctions between well-defined measures of economic value and other economic measures (e.g., jobs, economic impacts), and when different information is relevant to ESV.
- There is a concern that too much emphasis is placed on off-the-shelf decision support tools.
 - can be black boxes, or effectively so for those with little ESV experience
 - often rely on very simple benefit transfer methods

Key Findings

- Accurate and responsive ESV requires the involvement of natural science and economic experts from the outset.
 - Ensure that integrated methods are applied from initial scoping through data collection and analysis.
 - Incorporate human behavioral responses as part of ESV.
 - Recognize that the construction of the “ecological production function” is among the most challenging issues limiting ESV applications.

Recommendations

- Develop formal guidance linking types and applications of ESV to particular agency needs. This guidance should also:
 - Specify cases in which ESV is not recommended or high priority at this time.
 - Reflect established standards regarding what type of insight can be provided by different types of ecosystem service information.
 - Address topics for which common perceptions within NOAA may not correspond with recommended practices.
 - Clearly distinguish measures that may be interpreted as appropriate measures of economic value.
 - Emphasize the need for direct involvement of natural science and economic experts from the outset.

Recommendations

- Develop cross-LO institutions and structures capable of promoting and informing the use of high-quality ESV across the agency
- Encourage institutional familiarity with the value of information provided by ESV within decision contexts encountered by the agency
- Identify key capacity enhancements that would lead to maximum benefits for the agency's ability to conduct ongoing ESV as an organic aspect of decision-making
- Engage in dialogue with OMB (and other agencies, as appropriate) regarding expectations, approvals and constraints for ESV
- Implement these recommendations in close coordination with outside ESV communities of practice

Valuation Best Practices

- Agency-wide guidance for ESV best practices would be useful in all areas (revealed and stated preference valuation; benefit transfer)
- Guidance would be particularly helpful for:
 - stated preference valuation (reconcile perceptions & practice with consensus in the literature)
 - benefit transfer
 - valuation toolboxes and decision-support tools
 - development of “ecological production functions”
- Assistance matching decision contexts and types of values required to most appropriate methods

Examples Where NOAA Better Can Employ ESV in Decision Making?

- Valuation of Natural Capital (and determine when advisable)
- Modeling of Coastal Residence Choice (e.g., as related to climate change impacts)
- Analysis of Distribution of Impacts of Policy Change
- Indigenous Local Ecological Knowledge
- Ecosystem Services of Fisheries Beyond Harvests
- This is not a comprehensive list

Questions and Comments?

The ESMWG requests that NOAA SAB approve this report and transmit it to the NOAA Administrator