

Valuation of Forest Ecosystem Services

Project Summary and Update

September 17, 2014

Overview

Recent efforts by several southern States (e.g. TX, VA and GA) to estimate the value of forest-based ecosystem services have produced widely fluctuating results, due to differences in the types of ecosystem services and benefits evaluated and the valuation methodologies used. The Southern Group of State Foresters (SGSF) feels that for these types of assessments to be useful and comparable they need to be standardized across the region. To address this, the SGSF was awarded a USFS Regional Investment Grant to develop standardized methodologies for state-level valuation of ecosystem services and to provide individual states with guidelines that better enable them to quantify and value their ecosystem services. This will facilitate comparisons across states and support improved land use planning. USDA Forest Service Southern Research Station (SRS) is working jointly with North Carolina State University (NCSU) to implement this project through stakeholder meetings, literature review, and expert panels. Core team members are Evan Mercer and Tom Holmes with the SRS, and Erin Sills, Fred Cabbage and Susan Moore with NCSU. The objectives of the project are to:

- a. Identify and prioritize the suite of ecosystem services and benefits produced by southern forests.
- b. Identify methods to estimate values of the suite of ecosystem services and benefits identified in objective 1 and assess these methodologies for their accuracy and cost- effectiveness in valuation of forest ecosystem services at the state level.
- c. Develop a framework and template that provides standardized guidelines and methods to the southern states (as well as other states) to enable them to produce reliable, accurate, verifiable and comparable estimates of the quantity and value of the priority ecosystem services and benefits from southern forests.

Stakeholder Meeting

To achieve the first objective, a stakeholder meeting was held in Raleigh in February 2014. Approximately 40 stakeholders participated in a two-day meeting to discuss priorities and concerns for standardizing the methodologies for quantifying and valuing forest ecosystem services. Stakeholders represented 10 of 13 USFS Southern Region states, including private industry, non-governmental organizations, academia, and federal and state agencies. The primary motivation identified by stakeholders for valuing forest ecosystem services at the state level is to produce conservative and defensible estimate of the value of forests primarily for policy analysis and decision making at the state level rather than to be used for management decisions at the individual forest level. Stakeholders also identified the following ecosystem services as the most important for the study: 1. Water; 2.

Carbon/Air Quality; 3. Cultural services (ecosystem services that are inputs into tourism, recreation, hunting & fishing) and 4. Non-timber forest products (forest products other than industrial roundwood).

Meeting of Leaders of Panels of Experts

The next step in the project was to assemble panels of experts for each ecosystem service to develop the procedures and methods for valuing each ecosystem service. We recruited co-leaders (one economist and one non-economist) for five panels of experts; one for each of the four ecosystem services as well as an integrative panel. The integrative panel will focus on issues involved with aggregating quantity and value estimates for individual forest services at the state level. The following table lists the co-leaders for each panel.

Panel	Economist Expert	Non-Economist Expert(s)
<i>Water</i>	Tom Holmes, USFS Southern Research Station	Jim Vose, USFS Southern Research Station
<i>Carbon/Air quality</i>	Brian Murray, Duke University	Steve McNulty, USFS Southern Research Station Dave Nowack, USFS Northern Research Station
<i>Cultural</i>	Mike Bowker, USFS Southern Research Station	Taylor Stein, University of Florida
<i>NTFP</i>	Greg Frey, Virginia State University	Jim Chamberlain, USFS Southern Research Station
<i>Integrative</i>	David Simpson, USEPA	To be determined

A meeting of the expert panel co-leaders was held the first week of June. A wide ranging discussion ensued for how to approach quantifying and valuing each of the 4 ecosystem services and for how to aggregate the resulting valuations at the state level. Consensus was achieved amongst the participants on the following approach for preparing the final report for the project:

1. Goals/Objectives

- Propose state of the art approaches to quantify and value forest ecosystem services using currently available data across the region and that are defensible biophysically and economically to diverse groups of users including scientists, policy makers, government agencies, and the public;
- Describe improvements on those approaches or other approaches that may be possible in individual states where better data are available;
- Recommend improved/expanded data collection and analytical techniques that would allow more accurate estimation of ecosystem service values.
- Provide appendices listing relevant peer-reviewed scientific literature and providing links to data sources and to models.

2. Introductory Chapter:

- Describe parameters and framework for the analyses of individual services and discuss how they relate/compare to other types of values (e.g. market value of forest products, economic impact estimates).

3. Contents of Four Ecosystem Service Chapters:

- **Biophysical Quantification:** Describe state of the art methods (best practices) for quantifying the total annual flow of ecosystem services from forests in a state in physical terms appropriate for each category (water, air, cultural/recreation and NTFP),
 - a. Forest Types: Different panels may disaggregate forest types differently for different ecosystem services, but all categories should be nested;
 - b. Focus is on developing better estimates for areas of forest change over the past decade, including change in forest cover and change in forest quality due to management and other factors;
 - c. Identify which ecosystem service flows physically cross state boundaries (e.g. rivers, air quality, migratory wildlife).
- **Economic Valuation:** Describe state of the art methods for quantifying and aggregating the values of individual ecosystem service into one total value from an acre of each forest type/condition, supporting a theoretically defensible estimate of the annual value of ecosystem services lost or gained from forest change over the past decade.
 - a. Economic value estimates are intended for aggregation and thus should reflect consistent assumptions about forest type/management and counterfactual land use, and avoid any double-counting;
 - b. Develop methods for estimating value to the residents of the individual states and also to US residents, noting key differences;
 - c. Focus on methods for estimating annual values, e.g. amortizing value of changes in forest stock and aquifer quality;

3. Integrative Chapter

The integrative chapter will focus on how to appropriately sum values of individual ecosystem services to come up with one metric that represents the dollar value of changes in ecosystem services due to changes in forest cover and quality in the state. Issues to be addressed include (but are not limited to) how to integrate estimates into appropriate accounting frameworks; avoid double counting; level of precision; ensure internal consistency; and how estimates relate to known market values of forest products and the underlying values of supporting ecosystem services or functions.

Timeline

The following timeline was developed for preparing and finalizing the report for this project.

- November 1: Chapter outlines due
- March 15: First drafts due and distributed for internal review
- May 30: Revised drafts ready for external review
- June : Stakeholder meeting for comments on revised draft
- July 1: Deadline for comments from external reviewers
- August 15: Deadline for final chapter revisions

For futher information, contact:

*Evan Mercer, PhD
Research Economist
Southern Research Station, USDA Forest Service
PO Box 12254 (letters)
3041 Cornwallis Road (deliveries)
Research Triangle Park, NC 27709*

919-549-4095
emercer@fs.fed.us