Lessons and implications for ecosystem service valuation beyond USDA

David Ervin
Professor Emeritus of Economics and Environmental Management
Portland State University

dervin@pdx.edu

ACES Conference, December 8, 2016

Forces propelling ES valuation in public and private spheres

▶ Federal agency initiatives, e.g., USFS and OMB/OSTP/CEQ M-16-O1 memo for program accountability

▶ Paris Accord on CC (COP 21)

▶ Scientific literature, e.g., PNAS Nature as Capital 100th special anniversary feature

▶ Increasing effort by environmental (e.g., www.nature.org/science-in-action/ecosystem-services.xml) and business organizations (www.usbcsd.org/ecosystems)

Lessons from CFARE-USDA OCE project

1. Ecosystem service valuation is not rocket science! Accepted theory and data enable credible estimates for many issues and areas, but gaping holes exist.

2. Interdisciplinary teams enable comprehensive scientific assessment of monetary and non-monetary values.

   ▶ Engage all members (as equals) from the outset

   ▶ Clarify a consensus purpose of the valuation

Lessons from CFARE-USDA OCE project

3. Federal government and academic scientists bring complementary skills, perspectives and knowledge.
    - ▶ Government staff bring program relevance and practicality.
    - ▶ Academics bring regional ground truth and frontier science.
4. Agency guiding statutes and cultures can hamper intradepartmental and interdepartmental collaboration.
    - ▶ Statutory obligations and cultures must be confronted.
    - ▶ Recognize that different purposes are legitimate.

Lessons from CFARE-USDA OCE project

5. Theoretical and data gaps to model benefit delivery limit quantitative assessments for some topics.

   ▶ Interdisciplinary analyses can prioritize gaping holes

   ▶ Identify critical data gaps for priority RFPs.

6. Uncertainty about biophysical and socioeconomic linkages pervades valuation; treat it transparently!

   ▶ Dimensions – biophysical, socioeconomic, spatial and temporal; identify root sources, e.g., climate.

   ▶ Analyze with sensitivity analysis, e.g., Monte Carlo.

Implications beyond USDA

- Convene interdepartmental task forces to map strategy on common resources, e.g., pollinator health.
  - Enable quantitative analysis to broaden the set of services
- Engage leading academic scientists to complement government capabilities.
  - Choose scientists who value interdisciplinary approaches and public service.
  - Seek front-line stakeholder views of ES.
- Coordinate interdepartmental data collection.
  - For example USDA, USGS and EPA on water quality.

Implications beyond USDA

- Develop intramural and extramural research initiatives to fill the gaping holes in critical science and data.
  - Communicate priorities to NRC, NSF, etc.
- Build conceptual benefit process models to get the ecological supply side right, but don't stop there.
- Explicate the "demand side" of the chain to understand spatial and temporal drivers of scarcity.
  - Crucial to understand nature of non-use values
  - Shifts in demand drivers, e.g., income, exert significant effects.
  - Understand the distribution of benefits across social groups.

Appendix: ecosystem service definition

"Ecosystem services are the conditions and processes of ecosystems that generate—or help generate—benefits for people. These benefits result from the interactions among plants, animals, and microbes in the ecosystem, as well as biotic, abiotic, and human-engineered components of social-ecological systems. Ecosystem services are produced along the full spectrum of heavily managed ecosystems (e.g., agroecosystems)to ecosystems with low human imprint. Ecosystem services can be final (produce benefits directly, such as seafood) or intermediate (underpinning final services; e.g., the generation of habitats that support fish populations) (14) (Guerry et al 2015)."