

Monitoring & Verification of ES Markets:

Possibilities for Participation



"The Anatomy Lesson of Dr. Nicolaes Tulp" Rembrandt van Rijn, 1632

Mattijs van Maasakkers - City and Regional Planning, Ohio State University
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The Use of Citizen Science to Advance Ecosystem Services Implementation

Presentation Outline

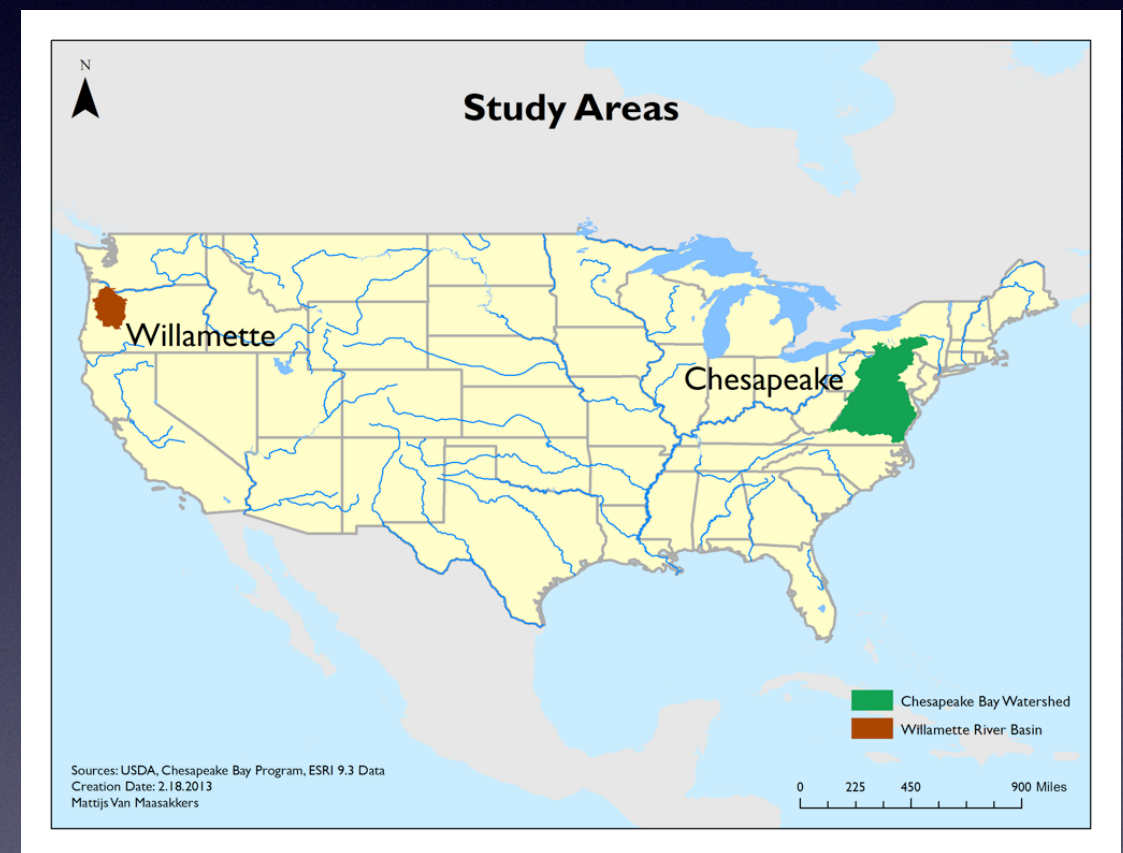
- Why is monitoring and verification important for ecosystem service markets?
- Research methods and sites
- Current monitoring and verification approach
- Integrative and participatory oversight

The Importance of Monitoring and Verification

- Investor confidence (Sanneman, Culliney and Cochran, 2014)
- Regulatory enforcement (Salzman, 2005)
- Institutional stability (North, 1991)
- Double-loop learning (Argyris and Schon, 1978; Gunderson and Holling, 2002)

Why is it so difficult to create an ecosystem service market?

- Willamette Ecosystem Marketplace - Counting on the Environment
- Chesapeake Bay Bank
- Point to Non-Point water quality trading in PA and MD



Ecosystem Service Markets in Practice

	Promise	Problem	Future?
Displacement	Connecting Urban and Rural	Outsourcing Green-space	Limit Scale & Clear Spatial Strategies
Measurement	Measurement of Trade-offs	Complexity Prevents Holism	Collaborative Tools
Participation	Harnessing Enthusiasm	Opponents remain Passive	Early Engagement & Monitoring

Oversight: *Verification*

	Willamette	Chesapeake
Water Quality Trading	Tualatin (temperature)	Nutrient Net (PA and MD)
Integrated Markets	Willamette Marketplace (temperature, wetlands, salmon habitat, prairie habitat)	Bay Bank (carbon, trout habitat, forestry, wetlands)

Limits of *Regulatory Verification*

- Limited to an assessment of on-site effects
- Narrow evaluation of benefits of restoration
- Reduces the diversity of stakeholders

Moving Beyond *Regulatory Verification*

- Creating Integrative Oversight
- Regular Ecosystem Summits (Fung, 2006)
- Dedicated Funding
- Professional Facilitation (Susskind et al, 1999)

Integrative Oversight: *incorporating aggregate effects*

- Evaluating spatial distribution of both impacts and restoration (Ruhl and Salzman, 2005)
- Including the (ecosystem) services and attributes NOT incorporated in formal metrics (Wynne, 1989)
- Analyzing market participation (buyers, sellers, brokers, regulators and beyond) (BenDor et al, 2008)

Ecosystem Summits:

Venues for Shared Learning

- Regular gathering of all relevant stakeholders
- River-basin scale
- Developing questions in collaborative fashion
- Engaging expertise to determine methods of inquiry
- Creating opportunities for interaction

Dedicated Funding: *Who Pays?*

- Close scrutiny of complex markets is primarily a government responsibility
- Capacity to develop integrated grant-making program exists at the federal level
- Separating the development of markets from their oversight is desirable
- Strong grounding in scientific methods and reputation for neutrality

Professional Facilitation

- Modeled after Joint Fact Finding (Karl, Susskind and Wallace, 2007)
- Complex negotiations can be improved by neutral facilitation (Bush and Folger, 1994)
- Significant mediation experience exists related to land use planning (Davidson and Trevarthen, 2001)

Summary

- Ecosystem Service Markets are emerging and contested institutions
- Durability of market-like approaches (WQT) is not a given
- Creating opportunities for shared learning and broader participation is necessary

Questions and/or Comments

Thank You!

vanmaasakkers.1@osu.edu