
The Nature Conservancy
Protecting nature. Preserving life.™
Agricultural Research Service
Water Availability and Watershed Management
Customer/Stakeholder Workshop
May 20, 2015
Kathy Boomer
© Insert Image Credit
Photo Credit: H. Stevens http://ian.umces.edu/imagelibrary/

TNC MISSION: Preserve the plants, animals and natural communities that represent the diversity of life on earth by **protecting the lands and waters** they need to survive.

* More than 3,500 employees, with more than 400 of whom are scientists.

The Nature Conservancy

Protecting nature. Preserving life.™

- Helped protect more than 119 million acres of land worldwide.
- Manage more than 100 marine projects around the globe.
- Own and manage the largest network of private preserves in the United States.
- Nearly 60 years of experience.
- Support from more than one million members.



Conservation by Design
Adaptive Management

Sustainable Agriculture

Goal:
Protect Lands & Waters

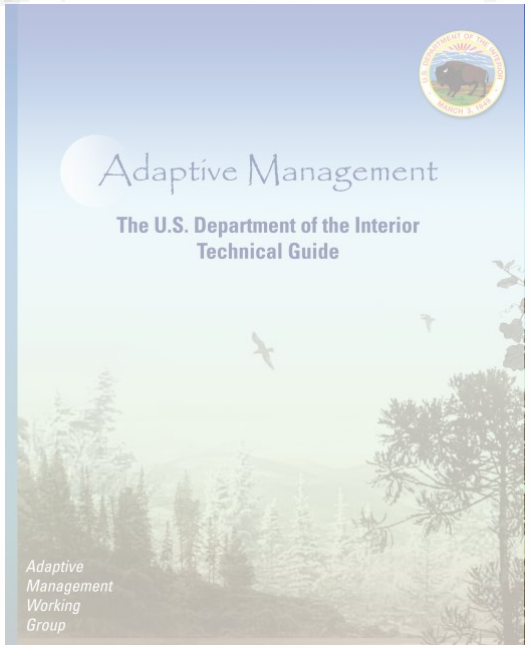
Concerns:
- Water Quality
- Habitat
- Flood/Drought
- Food Supply
- Cost

Options:
4R's
Infield/EOF Practices

Decision Tools:
- Watershed Models
- Precision Conservation

Implement:
- Location x 3
- Stakeholder Concerns
- Design

Monitoring & Evaluation:
- Field- & Watershed-Scaled



Decent grasp

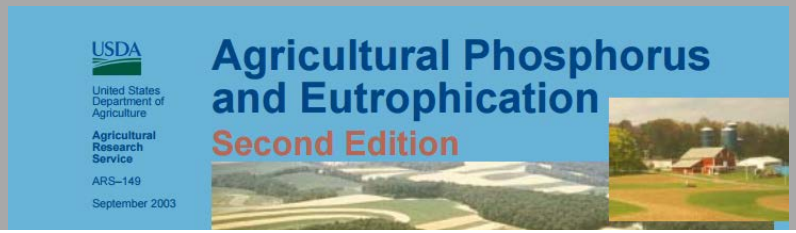
Needs work

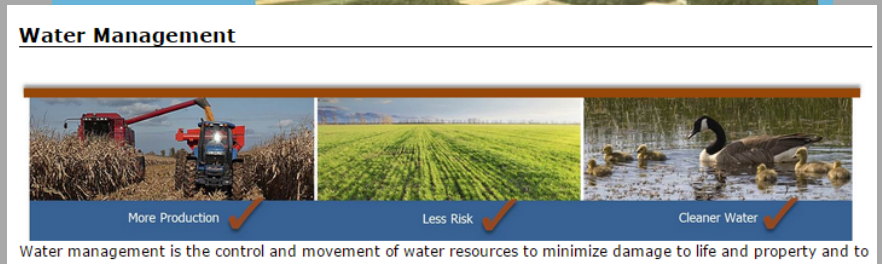
Characterizing Concerns:

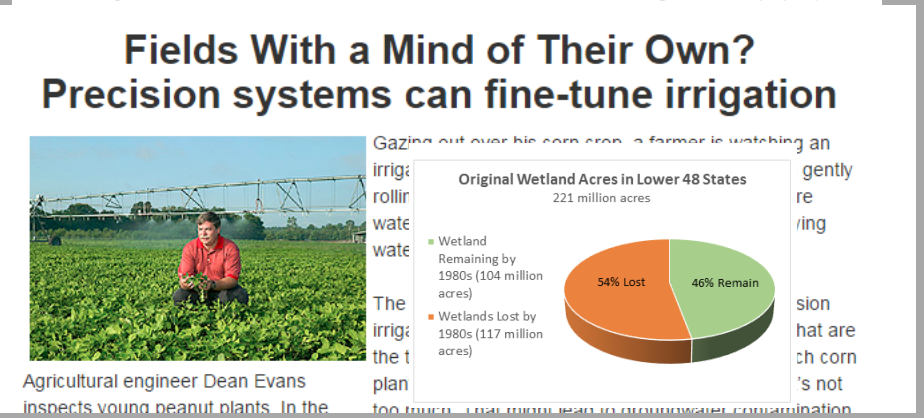
- Water Quality
- Habitat
- Flood/Drought
- Food Supply
- Cost

Customer/Stakeholder Concerns: Definitions

ARS' (Many) Accomplishments:

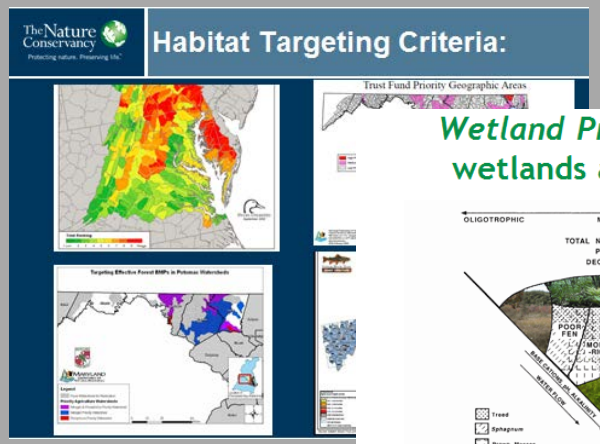


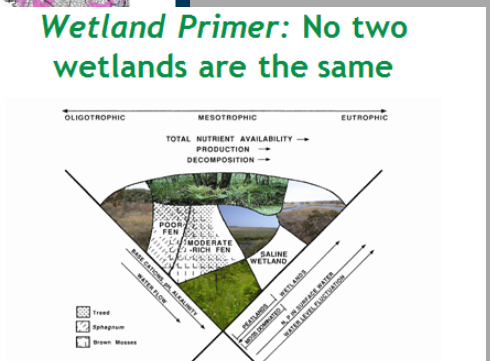




ARS Challenges:

- Better link water storage and water quality objectives.
  - Ex: Design models based on water volume; targeting tools based on average annual loads.
- Refine "habitat quality"





Decision Tools:
- Watershed Models
- Precision Conservation

Customer/Stakeholder Concerns: Uncertainty

ARS Accomplishments:

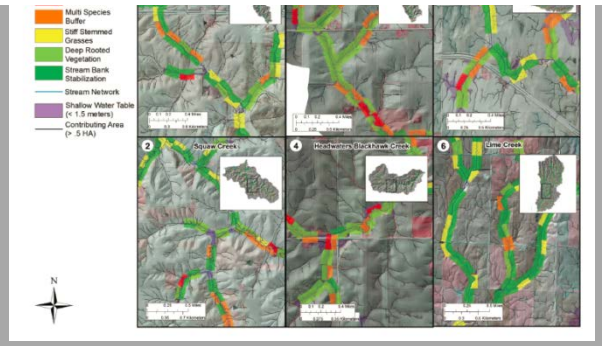
doi:10.2489/jswc.68.5.113A

FEATURE

Combining precision conservation technologies into a flexible framework to facilitate agricultural watershed planning

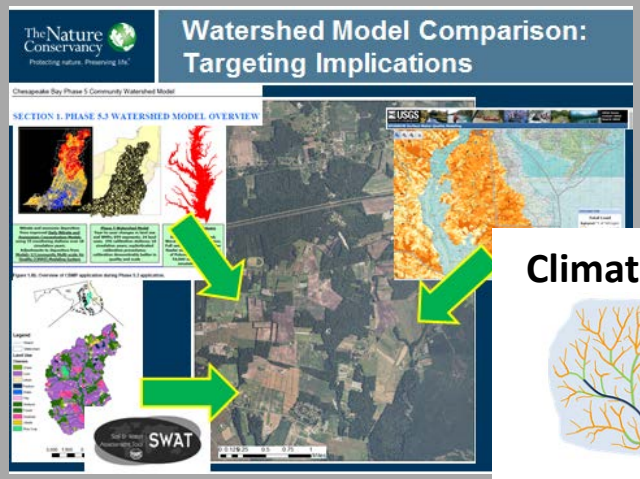
Mark D. Tomer, Sarah A. Porter, David E. James, Kathleen M.B. Boomer, Jill A. Kostel, and Eileen McLellan

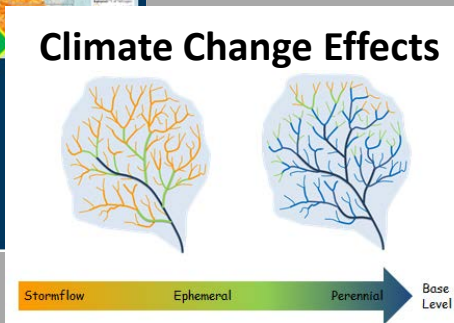
Available online: www.jswconline.org/content/68/5/113A.full.pdf+html



ARS Challenges:

- Develop prioritization algorithms
- Evaluate (structural) uncertainty
- Predict management outcomes in the face of climate change.





Implement:
- Location x 3
- Design
- Stakeholder Concerns

Customer/Stakeholder Concerns: Trust & Credibility with Landowners, Value Recognition

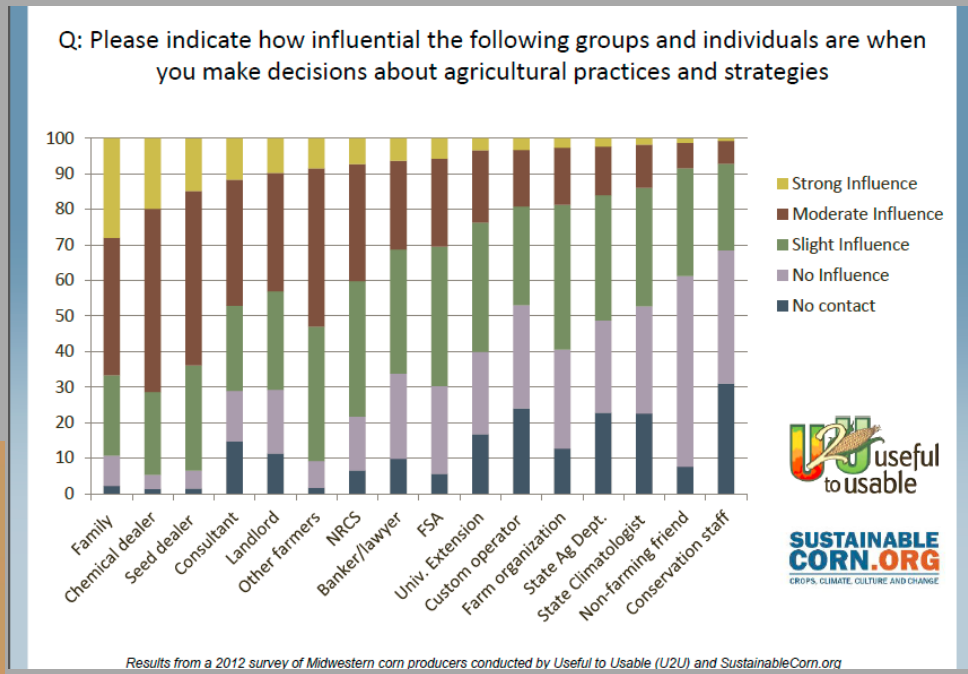
USDA Accomplishments:

Table 1—USDA Conservation Programs and Targeting

Program	Targeting Filter	Targeting Impacts
Conservation Reserve Program (CRP)*	Eligibility	Only highly erodible lands, or lands in regions with special conservation needs (Conservation Priority Areas), can be accepted.
	Ranking Mechanism	All offers are awarded points based on several different environmental factors. Offers that receive more points (summed across all factors) receive higher ranks.
	Cost	Less expensive acres receive more points in the ranking index.
	National/Local	Only a national ranking is used.
Environmental Quality Incentives Program (EQIP)	Eligibility	All farmers can apply, though 60% of all funding is dedicated to livestock producers.
	Ranking Mechanism	Allocation of money to States is based on an aggregate ranking index. The index considers a wide variety of State-level resource measures and measures of agricultural activity. States allocate funds using their own ranking mechanism.
	Cost	Cost can be considered as a factor, with certain restrictions imposed administratively and by Congress. In particular, "bidding down" (requesting a lower cost share for a practice) cannot be used as a deciding factor.
	National/Local	States devise their own ranking mechanisms, which can incorporate cost.
Wetlands Reserve Program (WRP)	Eligibility	Land that can be restored to wetlands and can provide wildlife benefits
	Ranking M	
	Cost	
	National/L	
Farm and Ranchlands Protection Program (FRPP)	Eligibility	
	Ranking M	
	Cost	
	National/L	

*The targeting impacts a
mental attributes (for exa

USDA Challenges:



- Understand socio-economic & political factors driving landowner concerns.
- Better capitalize on NRCS Soil Conservation Districts to transfer information

Decision Tools:
- Watershed Models
- Precision Conservation

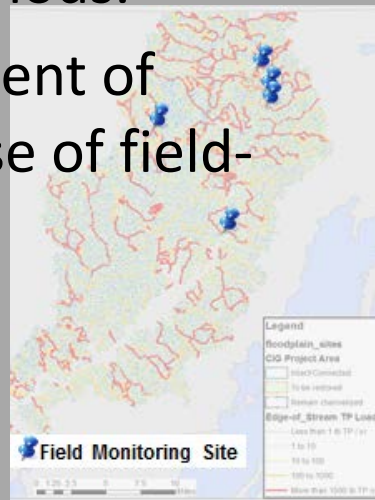
Customer/Stakeholder Concerns: Uncertainty, Part II

ARS' many, MANY Accomplishments:

A "ton" of state-of-the-art monitoring programs.

ARS Challenges:

- Develop models describing how/why bmp efficiency changes over space & time
- Prescribe conceptual monitoring approaches to improve consistency of methods.
- Promote development of centralized database of field-scaled studies.



Goal:
Protect Lands & Waters

Summary Recommendations for Future Watershed Management Research:

- **Address Broader Array of Stakeholder Concerns:**
  - Tie water storage & drought/flood mitigation with water quality work
  - Define objectives for “good habitat” and “healthy watersheds”

- **Promote Precision Conservation**:
  - Continue development of regional *decision tools* that model local conditions, including hydrologic connectivity, to optimize bmp location: confront uncertainties

- Based on Precision Conservation models, **explore social, economic, and political factors limiting our capacity to implement well designed practices in the most optimal location**.

- **Prioritize integrated, field-scaled designed explicitly to explore (alternative hypotheses of) how bmp performance varies across space and through time.**

Questions?

Kathy Boomer
kboomer@tnc.org
607-280-3720