CSREES' Contribution to the Conservation Effects Assessment Project

Mike O'Neill

National Program Leader,
Water Resources

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Outline

- Accomplishments from the CEAP Watersheds
- CEAP Synthesis
- Grazing Lands Watersheds
- Beyond CEAP - CSREES solving problems for conservation

CEAP Partnership

- This partnership is very valuable to CSREES
- Focused university research and extension (across all land grant institutions) on effects of conservation practices
- Generated widespread support for CSREES national conference and the SWCS conference
- Increased capacity of universities to partner with NRCS across the nation
- Substantial leveraging through state-university partnerships

Watershed Funding

YEAR	CSREES Contribution	NRCS Contribution	Total
2004	$1,577,000	$900,000	$2,477,000
2005	$1,754,000	$826,000	$2,580,000
2006	$2,612,000	$600,000	$3,212,000
2007	$422,000*	$600,000	$1,022,000
	$6,365,000	$2,926,000	$9,291,000

* Includes $178,000 FY 09 Funds

13 Watershed Projects

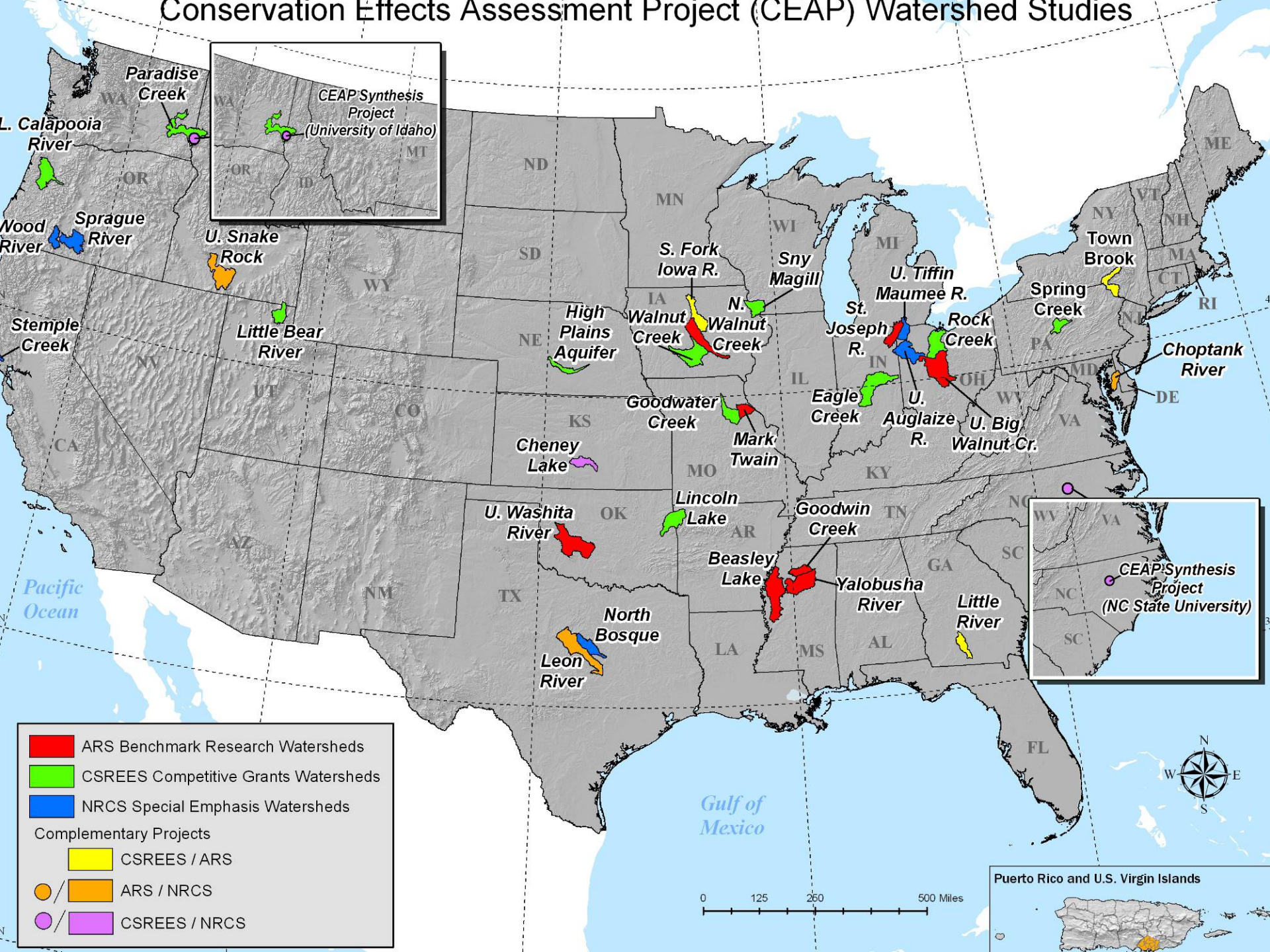
- Overview
  - Independent, university-led corroboration of USDA CEAP
  - Four projects jointly-funded in 2004 and 2005, five projects funded in 2006
  - Validation sites for National Cropland Assessment

Unique Contributions

- Projects are required to consider the biophysical effects of conservation practices ***AND*** the socio-economic context of the watershed/location
- Projects combine research activities with outreach to farmers, ranchers, and other citizens in the watersheds
- Long-term water quality, land use, and conservation practice data

Unique Contributions (cont.)

- Four key components for watershed projects:
  - Effects of timing and location of practices
  - Interaction among practices (additive, independent, or contradictory)
  - Socio-economic factors that facilitate or impede implementation and maintenance
  - Optimal suite and placement of conservation practices (modeling)


Conservation Effects Assessment Project (CEAP) Watershed Studies
Paradise Creek
L. Calapooia River
Wood River
Sprague River
U. Snake Rock
Little Bear River
Stemple Creek
CEAP Synthesis Project (University of Idaho)
S. Fork Iowa R.
Sny Magill
N. Walnut Creek
Walnut Creek
High Plains Aquifer
Cheney Lake
Goodwater Creek
Mark Twain
U. Washita River
Lincoln Lake
Beasley Lake
Goodwin Creek
Yalobusha River
North Bosque
Leon River
Little River
U. Tiffin
Maumee R.
St. Joseph R.
Rock Creek
Eagle Creek
U. Auglaize R.
U. Big Walnut Cr.
Town Brook
Spring Creek
Choptank River
CEAP Synthesis Project (NC State University)
Pacific Ocean
Gulf of Mexico
ARS Benchmark Research Watersheds
CSREES Competitive Grants Watersheds
NRCS Special Emphasis Watersheds
Complementary Projects
CSREES / ARS
ARS / NRCS
CSREES / NRCS
0 125 250 500 Miles
Puerto Rico and U.S. Virgin Islands

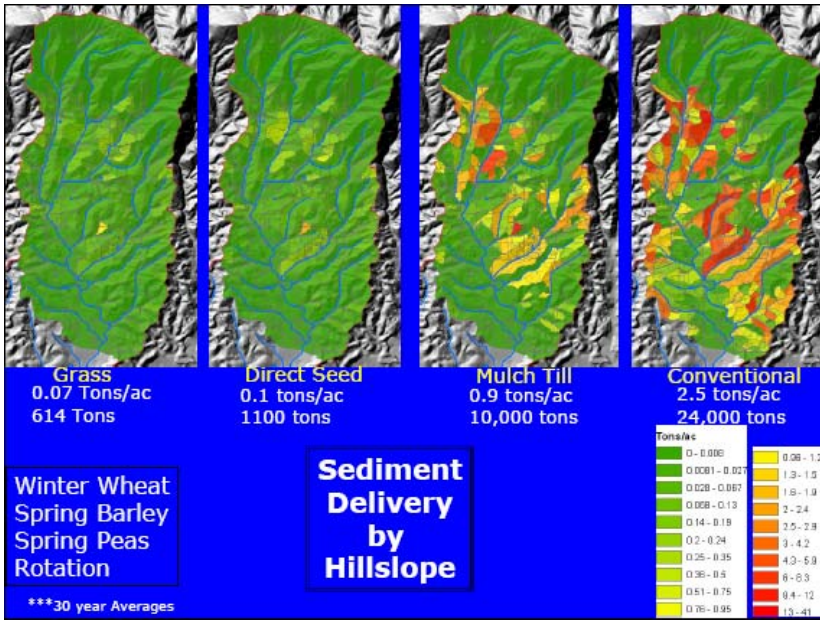
13 Watershed Projects

(shown in Major Land Resource Areas)

2004
2005
2006

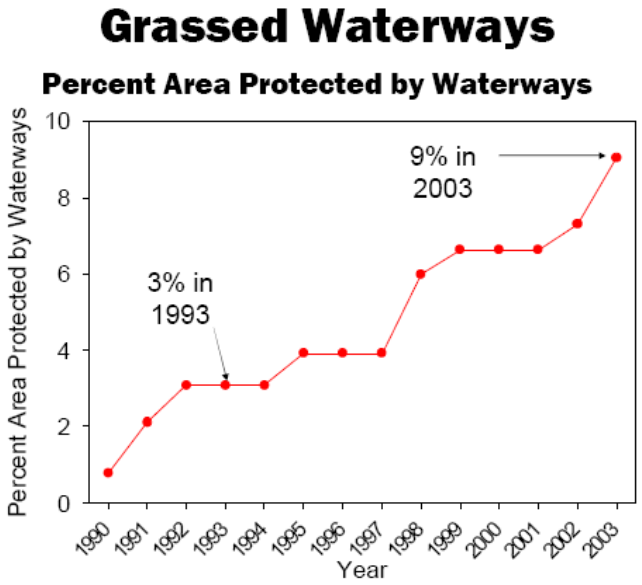
Watershed Accomplishments

- High levels of dissolved phosphorous were detected; conservation tillage is a likely cause
- BMP maintenance is inconsistent – follow-up with participants is critical
- Sediment loads in streams reflect complex field and stream bank erosion, hydrology, and sediment storage (long term)



Watershed Accomplishments (cont.)

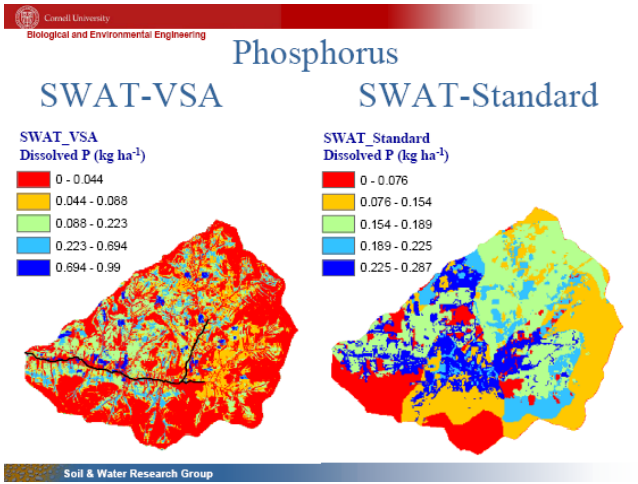
- Corn acreages increased – mostly with conventional tillage (greater erosion and runoff); atrazine levels were down



- SWAT model is not fully capable of dealing with riparian forest
- Stakeholder participation has moved watershed from conflict to cooperation
- Cost-share greatly influences landowner participation

Watershed Accomplishments (cont.)

- Variable Source Area flow models provide more accurate information on phosphorous source areas



- Different conservation mosaics yield substantial differences in water quality improvements
- Fish (and habitat) responses to stressors reflect an “envelope” constraint – not responsive to average conditions

CEAP Synthesis

Synthesis Goal:

Build a knowledge base that can be used to:

- Evaluate the impacts of conservation practices and programs on water resources across broad geographic regions,
- Improve management of agricultural landscapes, and
- Inform policy decisions

Expected Synthesis Outputs

- Pilot study of watershed synthesis (first four watersheds)
- Summary of lessons learned
- Synthesize findings from 13 watersheds including barriers to successful implementation of watershed conservation
- Develop educational materials to inform decision-makers including targeted outreach with key stakeholders including NRCS leaders (local, state, and national)

Two Synthesis Projects

- NC State University – Dr. Deanna Osmond
  - Develop a synoptic framework for coherently summarizing results from the 13 watersheds
- University of Idaho – Dr. Jan Boll
  - Develop a modeling framework to spatially distribute results from the 13 CEAP watersheds to greater geographic regions
- Joint CSREES-NRCS workshop in February 2008-09 at CSREES National Water Conference

13 Watershed Projects

(shown in Major Land Resource Areas)

2004
2005
2006

Grazing Lands Watersheds

- Focus on NRCS grazing conservation practices (e.g., prescribed burning, grazing management, invasive species management)
- Follow the template from the previous 13 watersheds:
  - Include social and economic analyses
  - Research and outreach focus

Grazing Land Watersheds: Key Questions

- What do we know about the impact on the hydrologic cycle from conservation practices on grazing lands?

- What do we know about the impact of grazing practices on watershed health?
  - soil quality,
  - plant communities and dynamics,
  - impacts on ecosystem services at the landscape scale

Grazinglands Watershed Projects

- FY 2008
  - Texas A&M
  - University of Arizona
  - Washington State University
- FY 2009
  - Expect to fund 2-3 additional projects

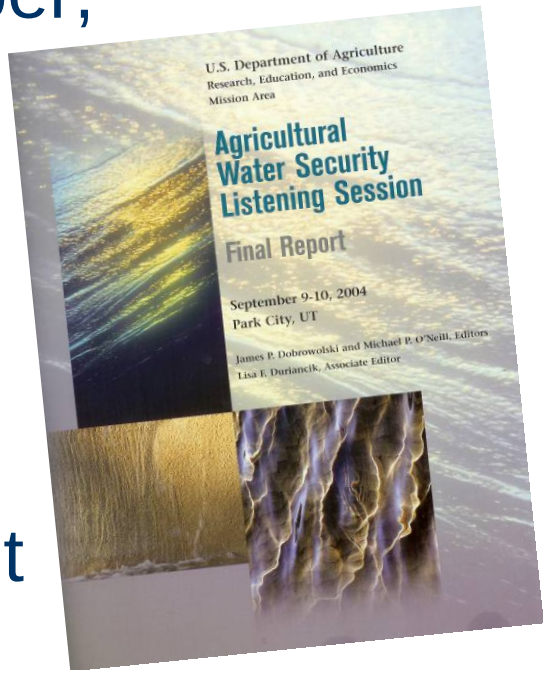
Beyond CEAP

- "Targeting" projects – watershed scale studies that explore water quality improvements achieved by focusing on specific areas or working with key individuals

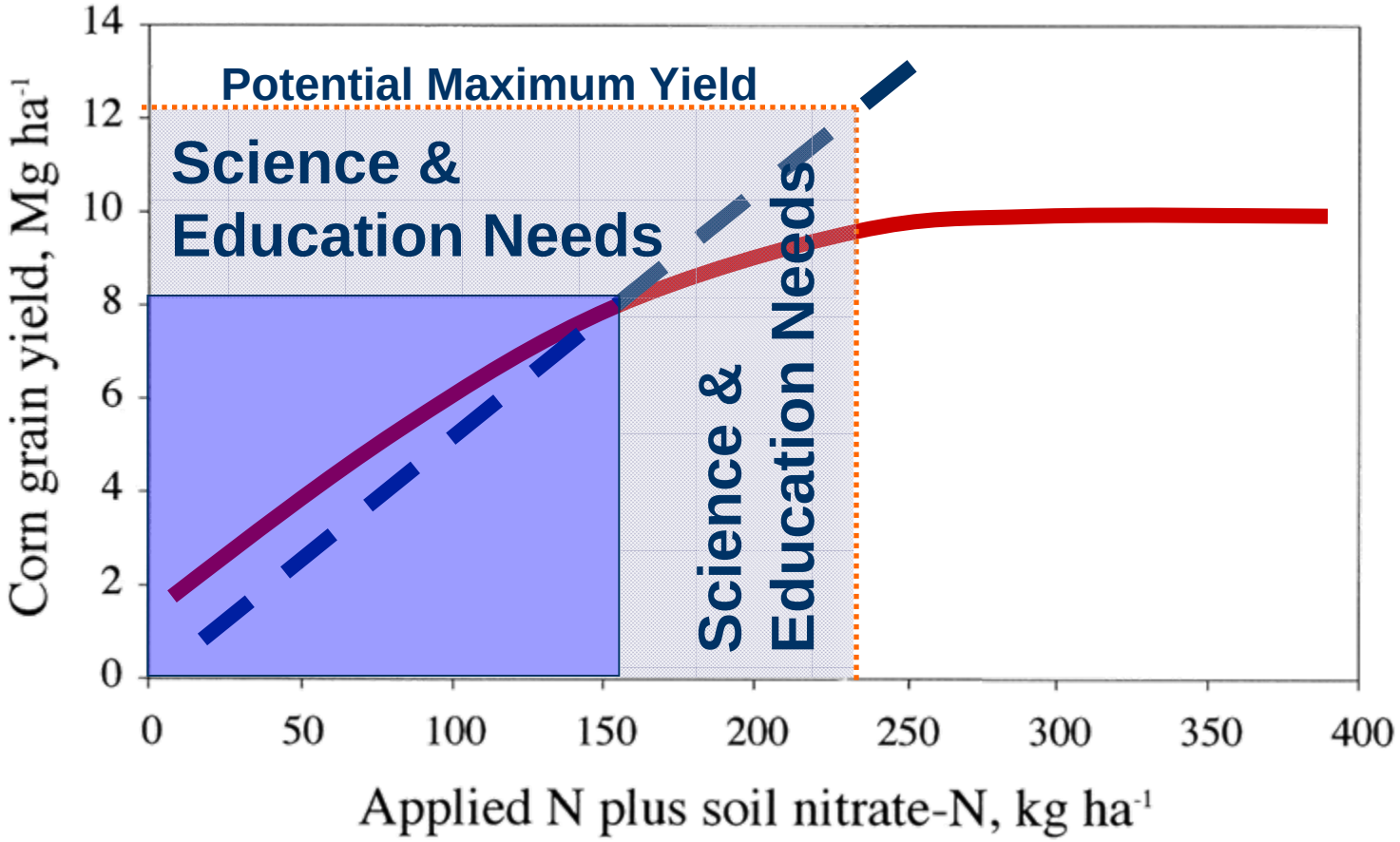
- Adoption Outreach – projects that develop non-traditional educational activities to improve adoption and maintenance of conservation practices

Beyond CEAP

- Agricultural Water Security – Ensuring sufficient water for agriculture to meet the growing demands for food, fiber, energy, and ecosystem services
- Water reuse – drought and increased demand for water are creating pressure on agricultural water supplies; expanding water reuse in agriculture can help meet these demands



The Next Generation of Projects



What are the science and education needs to optimize production while minimizing environmental degradation?

Taking CEAP
"To infinity and beyond"

- CEAP is an assessment of willing participants implementing reasonable practices
- How do we go beyond this level?
  - What is the appropriate science and extension approach to address the "unwilling" and the unknown?
  - How do we better understand the likelihood of interannual variability (weather, climate, yields)?