

Understanding farmer perceptions and management choices for reducing runoff in two Rock River Basin watersheds

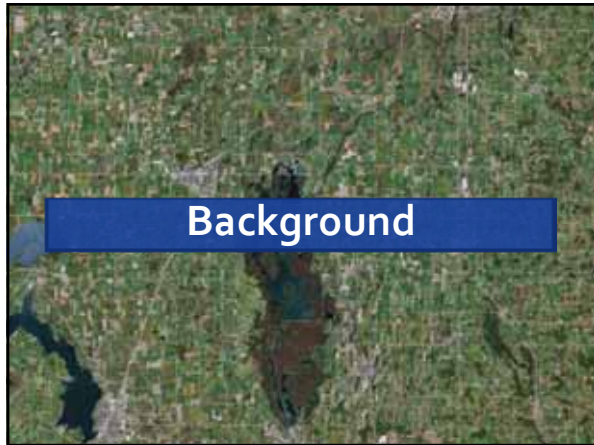


Overview

- Background—social indicators and Ag NPS
- Application to Upper Rock and East River Watersheds
- Observations and Next Steps
- Discussion

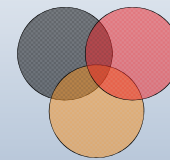
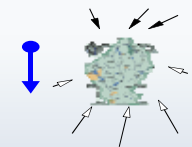


Background



Watershed as...

- A Problem domain
 - Multiple issues
 - Multiple stakeholders
- An institutional mess
 - Many actors
 - Top-down/bottom-up
- Framework for integration



NPS Challenges

- The major cause of water quality impairment
- Limited regulatory options
- Addressed mainly through persuasion and voluntary practices
 - Financial incentives
 - Technical support
 - Outreach & education
- Measurement problems
 - Response lag for environmental change
 - Upstream impacts can mask local improvements



For Many NPS projects

- Watershed based – restoration and protection
- Goals are reduction oriented
 - Total load (modeled)
- Voluntary involvement
- Technical and \$\$ assistance not targeted
 - Multiple sources (programs)
 - First-come basis
- Reporting
 - Administrative indicators
 - Environmental indicators



More Challenges

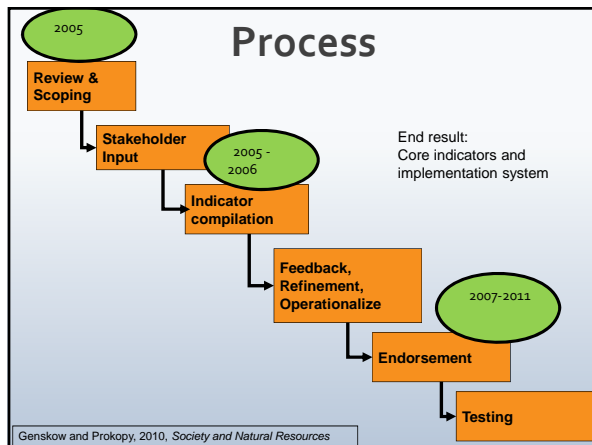
- Where and how to focus resources?
- How to know if making a difference?
- Administrative Environment:
 - Increasing competition/decreasing resources
 - Accountability demands
 - Resources for staff?

USEPA Region 5 States: Add "social indicators" to NPS

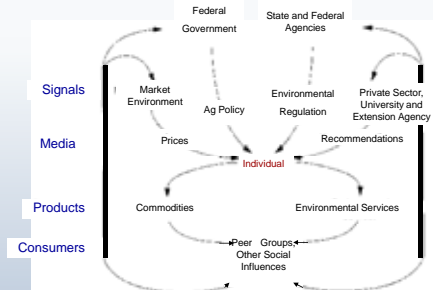
- | | |
|---|---|
| Traditional Uses <ul style="list-style-type: none"> • Human health • Housing • Education • Social equity | Other desirable data <ul style="list-style-type: none"> • Economic impact • Resource use and value |
|---|---|

■ **Our needs:**

- Complement Admin and Environ
- Interim, relevant for management
- Progress toward use and adoption



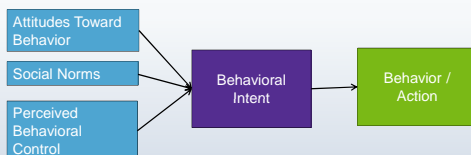
Individual Decisions



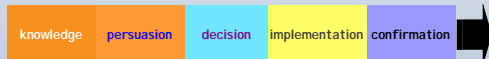
From Nowak, Shepard, Okeefe

Theories of Behavior Change

- Theory of Planned Behavior (Ajzen)

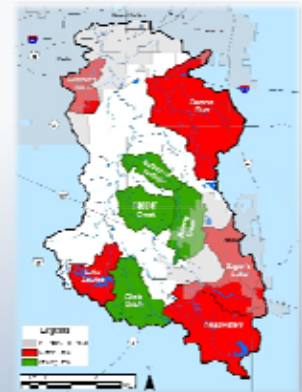


- Diffusion of Innovations (Rogers)



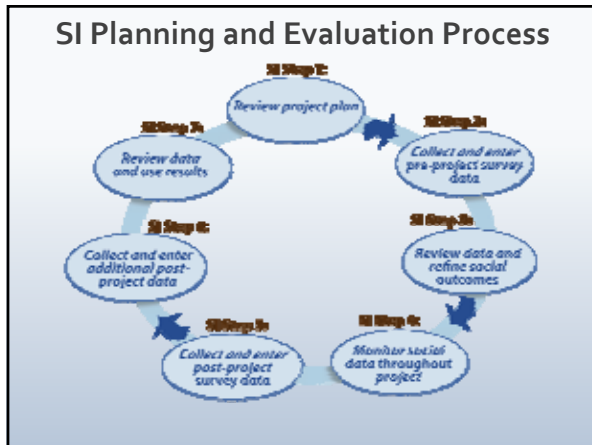
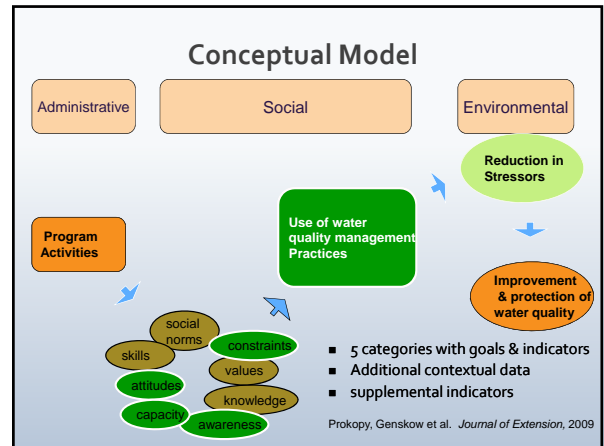
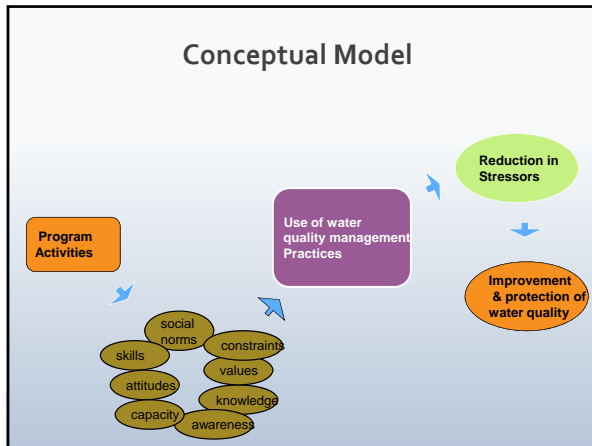
Targeting

- Dis-proportionate effects
- Focus for greatest impact



Salt Creek Watershed, IN

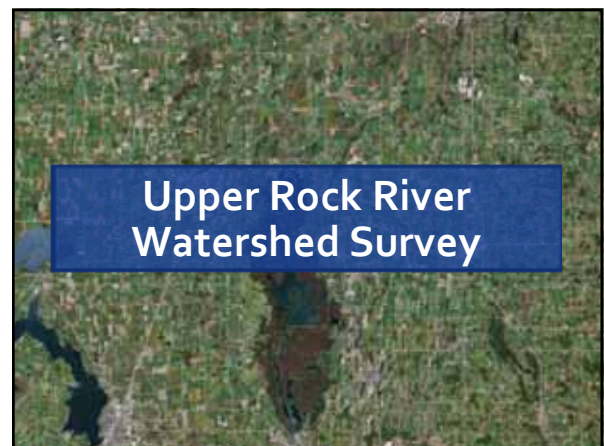
Source: Salt Creek Watershed Management Project. Save the Dunes, Michigan City, IN, 2010.

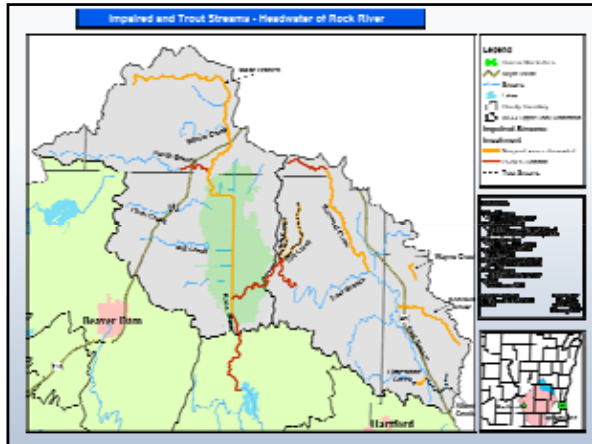


Social Indicators for Planning & Evaluation System (SIPES)

- Critical areas & target audiences
- Scale is project level
- Consistent survey questions and data collection protocols
 - Used across projects
 - Compared over time

- ### Before collecting social indicators:
1. What are the specific NPS problems this project is trying to address?
 2. What are the critical areas that contribute to the problem?
 3. Who are the target audience(s) for the NPS problem(s) your project will address?
 4. What actions do you want the target audience(s) to take regarding the NPS problems?





Survey Administration

- Spring 2010
- Target Audience: Farmers in sub-watersheds
- Mailed survey: multiple contacts
- 66% response (463 complete); individual Q response varies



Survey Content

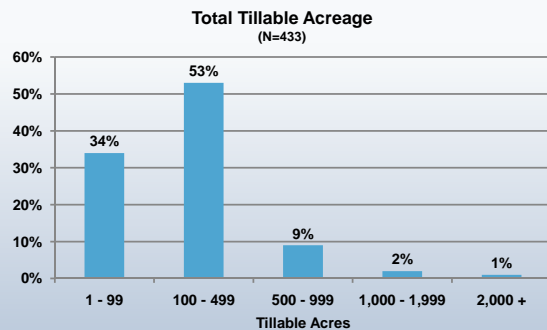
- Awareness:
 - water quality pollutants and sources
 - Management practices
- Attitudes toward water quality issues
- Use of practices
- Constraints to Practices
- Sources of information



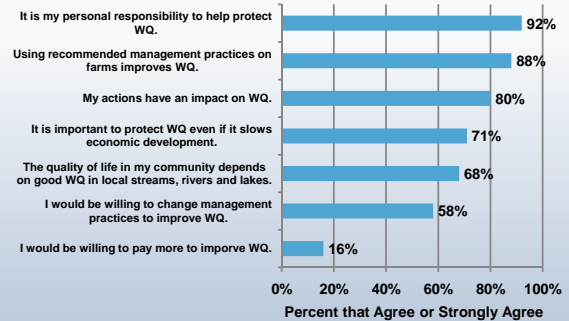
Farmer Characteristics

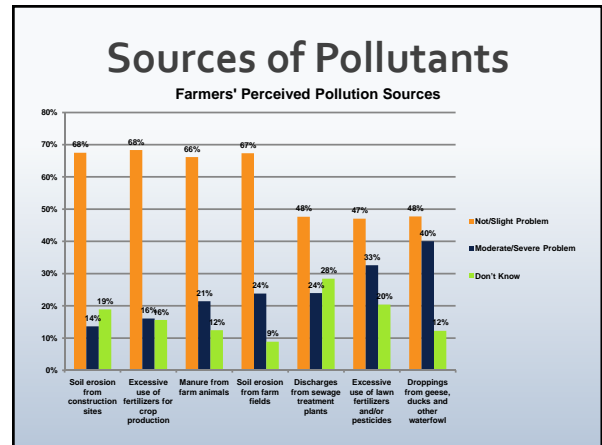
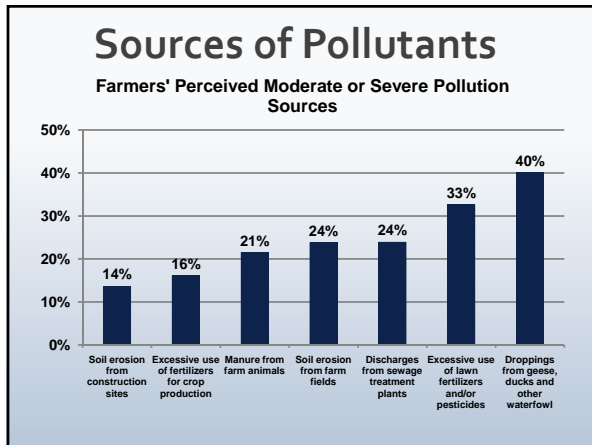
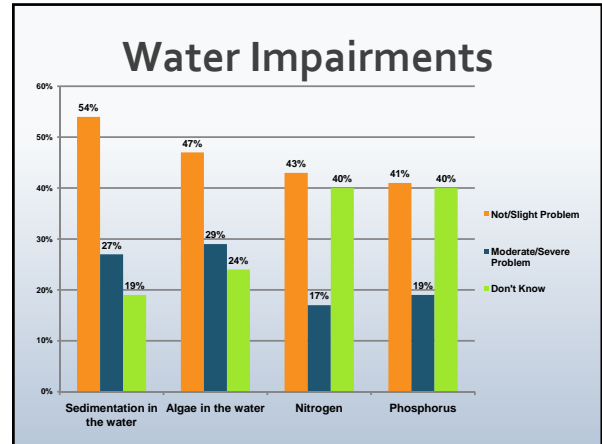
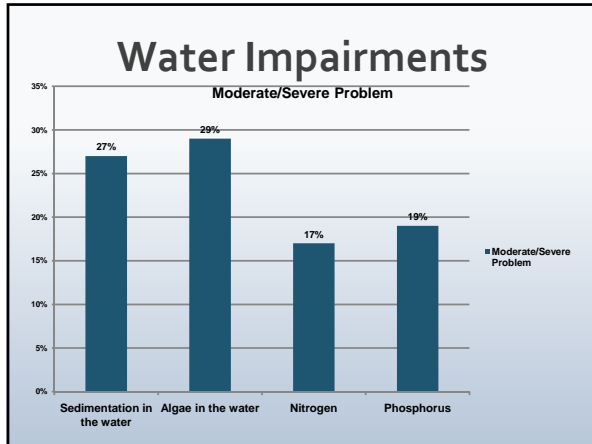
- Male (91%)
- Operating alone or with spouse (49%)
- Operating with other family partners (33%)
- Family member likely to continue farm (44%)
- Operation < 500 acres (87%)

Farm Acreage



Attitudes toward Water Quality Issues





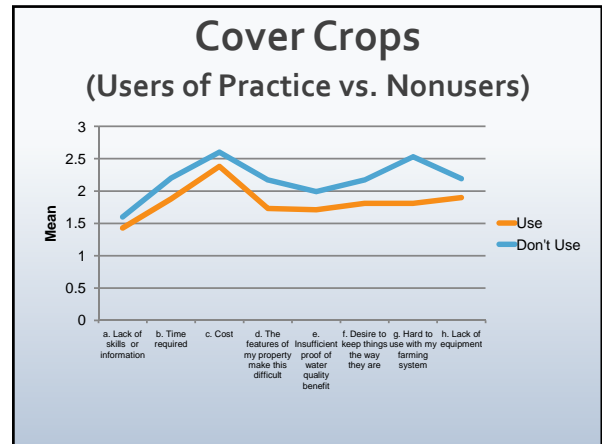
Use of Practices

Practice	Currently use it
Rotate crops to control soil erosion	84%
Use a grassed waterway to reduce erosion and soil loss	67%
Conduct regular soil tests for pH and nutrients	56%
Restore wetlands	30%
Install runoff control practices for feed lots	27%
Construct a manure storage facility	22%
Use a managed grazing system	20%
Construct sediment basins to collect and store sediment	13%
Regulate the water level in tile lines	10%
Install a two-stage ditch design to reduce bank erosion	5%

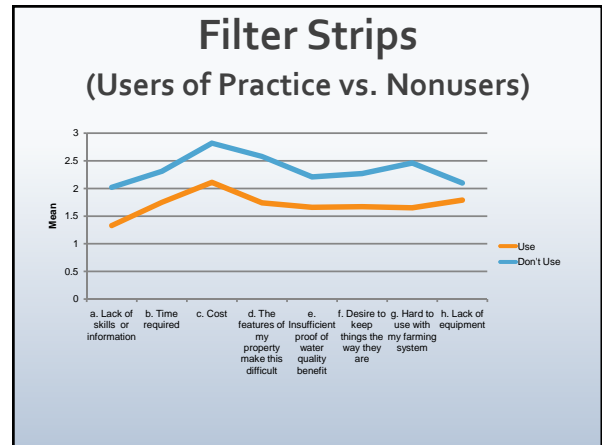
Use of Practices

	"Yes" or "Maybe" willing to use	Currently using
Conservation Tillage	90%	74%
Cover Crops	91%	62%
Filter Strips	79%	44%
CNMP or MMP	72%	36%

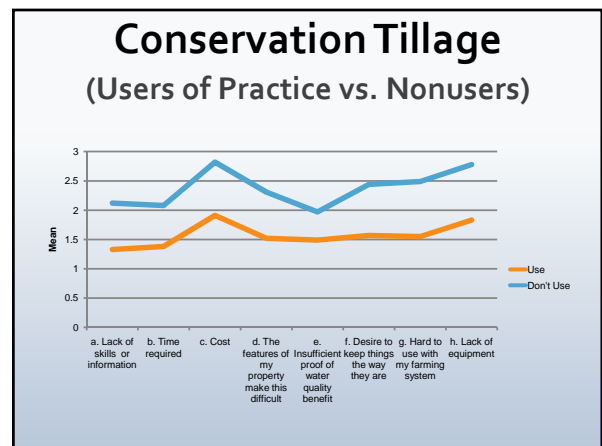
Constraints to Using Cover Crops				
	Not at all	A little	Some	A lot
a. Don't know how to do it	66%	20%	12%	2%
b. Time required	42%	26%	23%	9%
c. Cost	29%	19%	31%	22%
d. The features of my property make it difficult	49%	22%	22%	8%
e. Insufficient proof of water quality benefit	51%	23%	20%	6%
f. Desire to keep things the way they are	48%	21%	20%	11%
g. Hard to use with my farming system	43%	23%	21%	14%
h. Lack of equipment	45%	20%	24%	11%



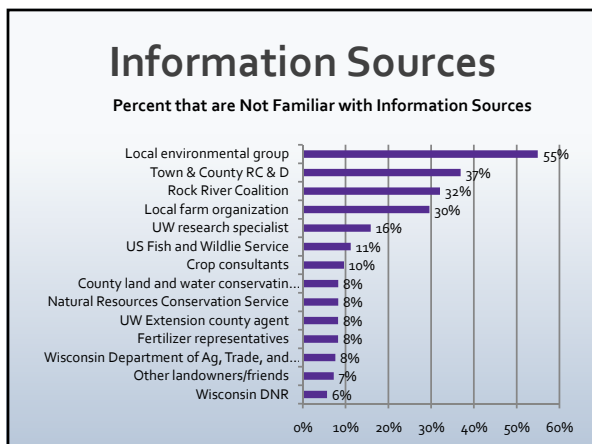
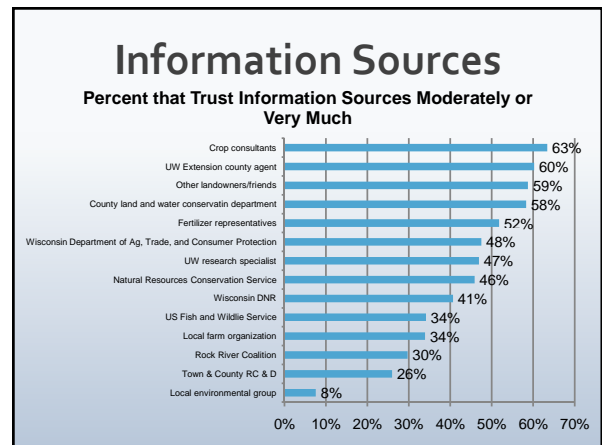
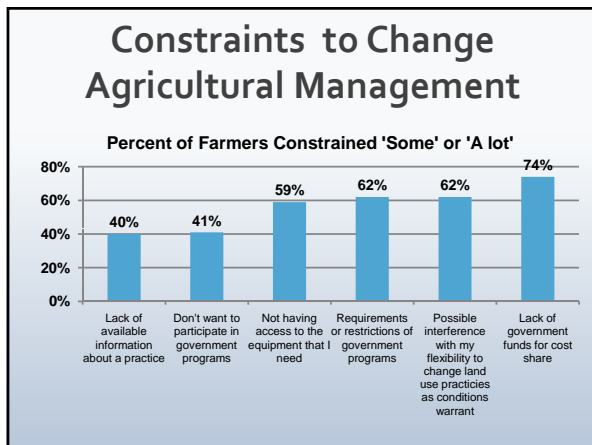
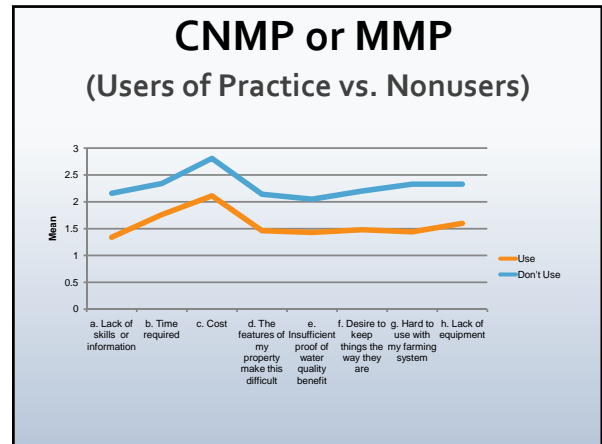
Constraints to Using Filter Strips				
	Not at all	A little	Some	A lot
a. Don't know how to do it	56%	24%	15%	4%
b. Time required	39%	28%	24%	9%
c. Cost	30%	19%	26%	25%
d. The features of my property make it difficult	37%	24%	25%	15%
e. Insufficient proof of water quality benefit	47%	22%	21%	10%
f. Desire to keep things the way they are	47%	20%	19%	13%
g. Hard to use with my farming system	42%	23%	22%	13%
h. Lack of equipment	47%	22%	21%	10%



Constraints to Using Conservation Tillage/Residue Management				
	Not at all	A little	Some	A lot
a. Don't know how to do it	69%	16%	10%	4%
b. Time required	67%	19%	9%	5%
c. Cost	44%	20%	17%	19%
d. The features of my property make it difficult	59%	21%	14%	7%
e. Insufficient proof of water quality benefit	61%	24%	9%	5%
f. Desire to keep things the way they are	60%	16%	14%	11%
g. Hard to use with my farming system	57%	21%	13%	9%
h. Lack of equipment	47%	19%	19%	16%



Constraints to Using CNMP or MMP				
	Not at all	A little	Some	A lot
a. Don't know how to do it	53%	23%	16%	9%
b. Time required	41%	24%	21%	14%
c. Cost	32%	18%	18%	32%
d. The features of my property make it difficult	56%	16%	19%	10%
e. Insufficient proof of water quality benefit	58%	18%	15%	9%
f. Desire to keep things the way they are	53%	19%	16%	13%
g. Hard to use with my farming system	51%	20%	14%	15%
h. Lack of equipment	48%	19%	16%	16%



- ### Observations/Next Steps
- Importance of local review and discussion
 - Initial Observations:
 - Perception of limited severity of most sources
 - Potential for focus practices
 - Differences among users/non-users constraints
 - High/low trust for soil/water conservation
 - Benchmark for future comparison

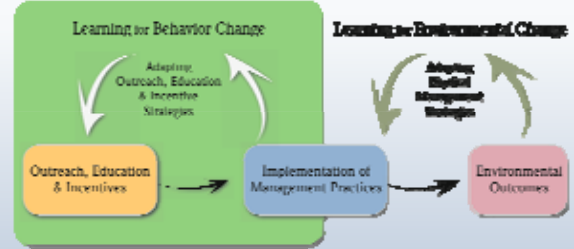
Discussion

Acknowledgements:

Regional Social Indicators Project:
<http://greatlakeswater.uwex.edu/social-indicators>

Kim Ness and Andy Meyers, UWEX/ERC for assistance
with survey and results

Learning and Adaptation



Genskow and Wood, 2009, *Jrnl of Planning Literature*