

# It's About The People: Using Human Dimensions Information for Lake Management

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**“A conservation action that is highly desired by some segments of society may be vigorously opposed by other segments.”**

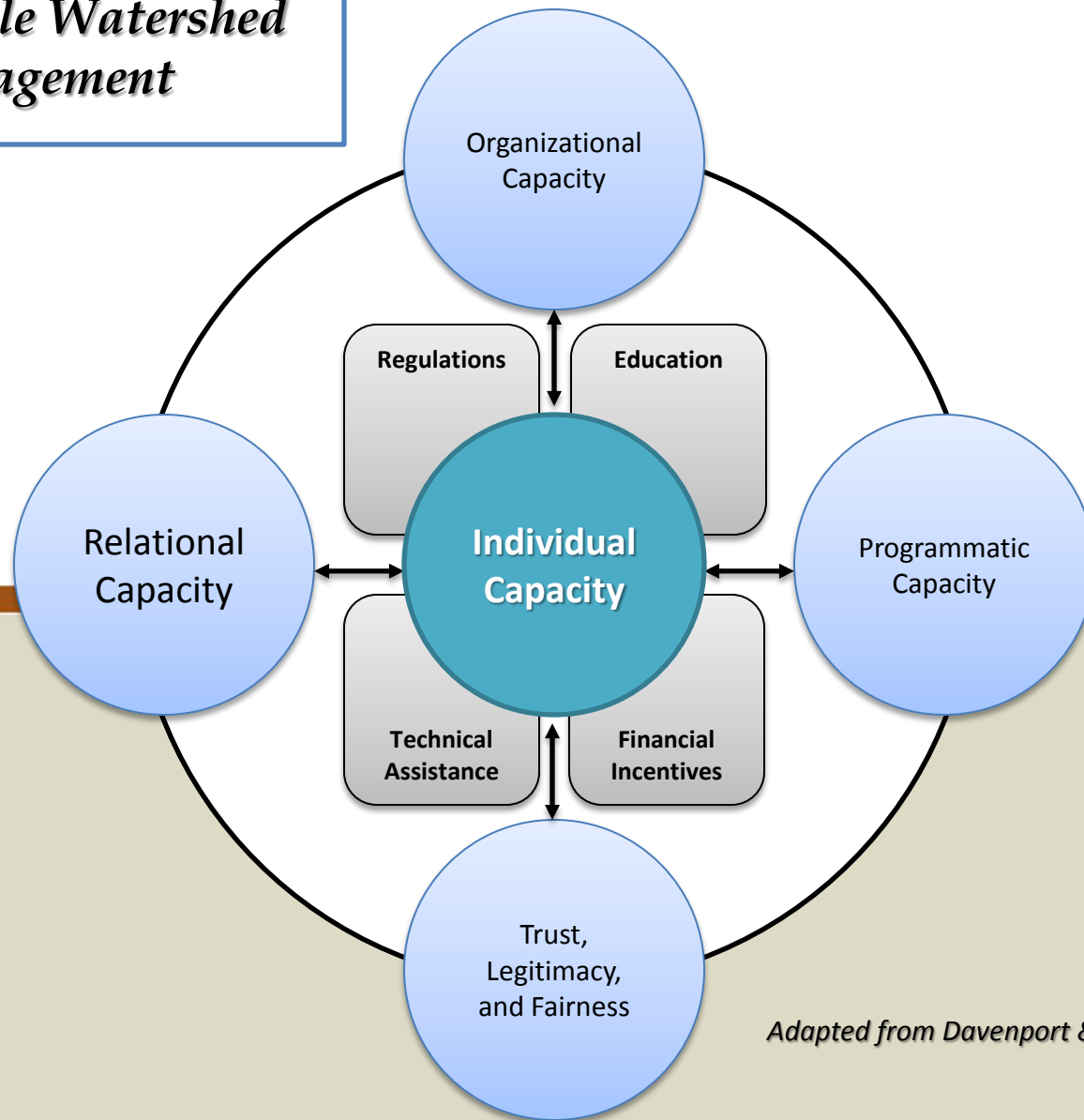
*(Walter et al., 2007)*



## **Role for Social Science** – Key research questions to support watershed planning efforts by building understanding of:

1. **Citizen Engagement:** How can we develop a meaningful citizen engagement process, covering wide geographic range and diversity of stakeholders?
2. **Identify Willing Partners:** Where are there spatially linked willing partners? Which areas have the greatest community resources available?
3. **Economic Values & Barriers:** What is the economic value of clean water? What are economic barriers to implementation?
4. **Watershed Governance / Community Capacity:** Which areas have the greatest community resources available? How are overlapping boundaries and local, state, and federal policies and programs impacting water relevant behaviors and actions at the individual and collective levels?
5. **Effective Messaging:** How can we explain TMDLs in language meaningful to target audiences?

# *Sustainable Watershed Management*



*Adapted from Davenport & Seekamp (2013)*

# *Sustainable Watershed Management*

## **Building relationships requires:**

- Knowledge exchange through informal social networks
- Building a sense of community identity
- Common awareness & definition of problem
- Creating a collective sense of responsibility

Relational  
Capacity

Individual  
Capacity

## **Collaborative planning requires:**

- Transparent dialogue and process
- Consistent, defined roles and process
- Valuing diversity of individuals, beliefs, and actions
- Intentional representation of stakeholder groups

Trust,  
Legitimacy,  
and Fairness

# *Sustainable Watershed Management*

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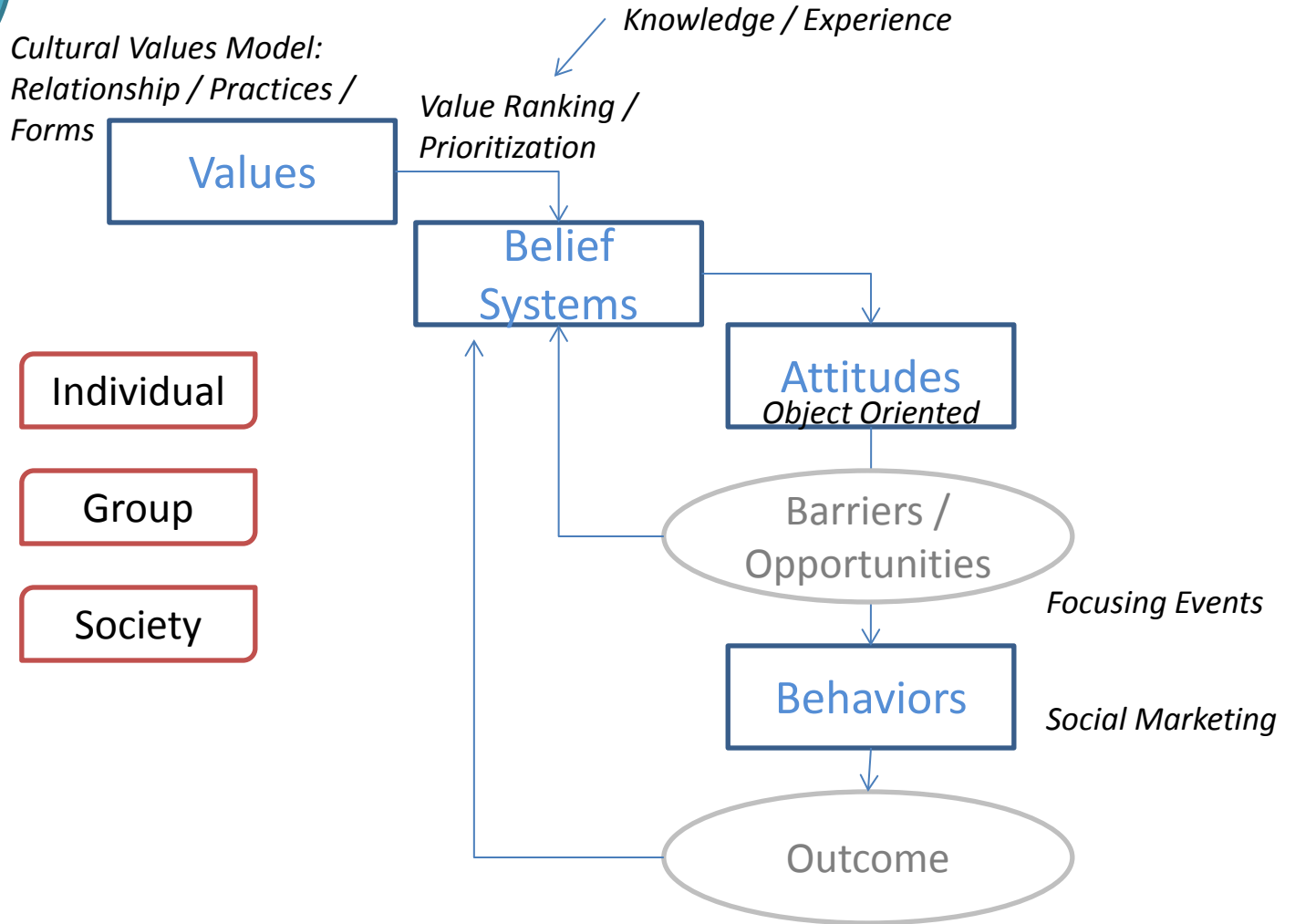
Individual  
Capacity

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Trust,  
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# Individual Capacity





# Lake Wausau Project Phase II, Task 6

## Social & Economic Values Survey



As a resident of one of the communities that surround Lake Wausau you have been randomly selected to receive a survey concerning efforts to improve the community resource of Lake Wausau. This survey is being conducted by faculty in the College of Natural Resources at the University of Wisconsin-Stevens Point in partnership with the Lake Wausau Association and sponsoring local governments. Survey results will help these groups understand how residents in the Wausau area interact with and value Lake Wausau and the Wisconsin River. Results will inform ongoing research and activities to improve water quality in Lake Wausau. **All results will be kept confidential** and if you have any concerns about the treatment of research participants please contact the UWSP Institutional Review Board that can be reached at (715) 346-4598.

Your voluntary participation in this survey is a chance to be a part of the process of determining the future for Lake Wausau. Please take the time to share your views about this important community resource by completing and returning the survey in the enclosed postage paid envelope. If you have questions about the survey, please feel free to contact one of the members of the research using the informations provided below.

Thank you for your assistance,

Dr. Aaron Thompson  
Assistant Professor  
aaron.thompson@uwsp.edu  
715.346.2278

Dr. Melinda Vokoun  
Assistant Professor  
melinda.vokoun@uwsp.edu

Dr. Kristin Floress  
Assistant Professor  
kristin.floress@uwsp.edu

### PLEASE READ BEFORE BEGINNING THIS SURVEY:

The survey must be completed by an adult member of your household 18 years of age or older.

Please mark all answers clearly, in pen or pencil, as indicated below.

Example "A"    Example "B"

### The Lake Wausau Association

Have you heard of the Lake Wausau Association?

Never heard of them  Heard of them, but don't know what they do  Heard of them, and know what they do

Lake Wausau Association's (LWA) mission is "to protect, maintain, and enhance environmental and recreational values on Lake Wausau and its surroundings; to organize and conduct activities intended to maintain or improve the ecology, water quality, fishing, and recreational use of Lake Wausau." — lakewausau.org

Do you agree with the priorities that the Lake Wausau Association has put forth in their mission statement?

Strongly Disagree  -3  -2  -1  0  1  2  3 Strongly Agree

# Study Design: Set up to achieve 30% response rate

## 5 Wave Mailing Process:

1<sup>st</sup> Week  
June  
2013

Contact #1: Address Screening Letter / Introduction

Contact #2: Survey Booklet

Contact #3: Reminder Postcard

Contact #4: 2<sup>nd</sup> Survey Booklet

3<sup>rd</sup> Week  
July  
2013

Contact #5: Reminder Postcard

## Lake Wausau Community Survey



University of Wisconsin-Stevens Point  
College of Natural Resources

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Strongly Disagree  -3  -2  -1  0  1  2  3 Strongly Agree



## Topics Covered:

Introductory Questions

-Lake Wausau Association

-Water Quality Knowledge

Governance & Policy

Community Perspectives

Economic Variables: Tied to lake activities

Mapping: Issues, improvement, recommendations

Demographics

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Strongly Disagree  -3  -2  -1  0  1  2  3 Strongly Agree



## Sample:

Developed 'in-house' using parcel data provided by Marathon County focusing on homeowners within these communities

Total: 850 participants  
Representative sample:  
-160 randomly selected households from each community: Wausau, Schofield, Rothschild, & Rib Mountain

Oversample:  
-210 randomly selected households from near lake neighborhoods



	Sample	N	Response Rate
Wausau	156	56	35.90%
Schofield	156	62	39.74%
Rothschild	158	68	43.31%
Rib Mountain	159	83	52.20%
Near Lake Neighborhoods	207	99	47.83%
<b>Overall</b>	<b>836</b>	<b>358</b>	<b>44.31%</b>



## LWA Familiarity Results:

(-) There is a general lack of familiarity with the Lake Wausau Association – **41% of respondents had not heard of the organization.**

(+) Respondents are very supportive of the abbreviated mission statement included in the survey – **82% agreed with their priorities.**

### The Lake Wausau Association

Have you heard of the Lake Wausau Association?

Never heard of them	<input type="checkbox"/>	Heard of them, but don't know what they do	<input type="checkbox"/>	Heard of them, and know what they do	<input type="checkbox"/>
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## Perception of the resource:

+Respondents ranked 30 statements representing various attributes of the lake and surrounding community facilities

+Analyzed using a 'Inverted-R' factor analysis procedure (Thompson et al., 2013)

## Community Perspective towards Lake Wausau

Please describe your level of agreement on the following scale for each of the statements that relate to general views of Lake Wausau; in general the questions relate to areas on, along, or around the lake and Wisconsin River.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	SD	D	N	A	SA
Lake Wausau vastly adds to the beauty of the community and its surroundings.	-2	-1	0	1	2
It is important for community members to take an active role in determining the future of Lake Wausau.	-2	-1	0	1	2
I choose to spend my time elsewhere because of the lack of recreation facilities on the lake.	-2	-1	0	1	2
Providing better habitat for fish and wildlife motivates me to support efforts to improve Lake Wausau.	-2	-1	0	1	2





## Perception of the resource:

+ 'Inverted-R' process revealed 4 distinct belief systems among respondents

+ Process also identified commonalities, including that all groups:

1. Strongly agree that Lake Wausau adds to the beauty of the community (Item #1).
2. Strongly agree that community members must take an active role in the future of Lake Wausau (Item #2).
3. Agree that Lake Wausau contributes to the community's ability to attract new residents and employers (Item #7).
4. Agree that local funding to revitalize Lake Wausau is a good investment in the future (Item #8).





## Perception of the resource:

### *Group 01: At home on Lake Wausau*

Residents who hold this view **enjoy spending time on Lake Wausau**, seeing plentiful outdoor recreation options and good fishing as some of the high points of their time spent here. For many they view **recreating at Lake Wausau as part of a tradition that keeps them coming back** over and over again. They disagree with others who think the lake is dirty and getting worse and for most hold the opposite **opinion that the water is safe for recreating and they are willing to eat fish caught there**. These individuals believe that the parks on Lake Wausau represent some of the most beautiful places in the county and disagree that there is an unpleasant odor that prevents them from recreating here. When it comes to who is responsible this group **sees that both the DNR and local government have appropriately responding** to the conditions on Lake Wausau.



## Perception of the resource:

### *Group 02: Hard working Lake Wausau*

There are a couple of similarities between residents who hold this view and Group 1 as both **believe that Lake Wausau has plentiful outdoor recreation opportunities** and that the parks along the lake are some of the most beautiful places in the county. Outside of these areas individuals in group 2 are **less motivated by providing fish and wildlife habitat** than other groups and instead believe that the lake is important because of the **role it plays in supporting manufacturing within the community**. They enjoy outdoor recreation, but don't choose to spend their time on the lake. However, this slight to recreating here doesn't seem to be linked to concerns over smell or water quality issues. They are also the **least likely to support stronger regulations of activities to protect the enjoyment of the lake for all users** and are the least supportive of the involvement of DNR in lake management. When it comes to local funding this group agrees with the investment for the future, but support is lower than for any of the other groups.



## Perception of the resource:

### *Group 03: When recreating, it's not on Lake Wausau*

**Negative experiences and perceptions of the recreational aspects of Lake Wausau dominate** the views of members of this group. In particular, they view the lake as lacking recreational facilities and feel that there is **too much competition (or crowding)** that makes it difficult to enjoy what is here. They view the **parks as being less safe** than members of other groups, which in combination with the other factors may explain why this group that does enjoy outdoor recreation chooses to spend their time elsewhere. Put simply they don't see the lake as a good place for doing the things they enjoy most, citing **poor fishing opportunities and frequent disruption from other users** as reasons they go to other lakes. This group seems less connected to the lake as they disagree that spending time here is a tradition or that the lake plays a role in building community between those that live and recreate here. They do support efforts to improve the lake especially by focusing on enhancing fish and wildlife habitat, but they **also feel that the condition of the lake is a reflection of local government not taking responsibility** to manage the problems.



## Perception of the resource:

### Group 04: *It's dirty and the time has come to fix Lake Wausau*

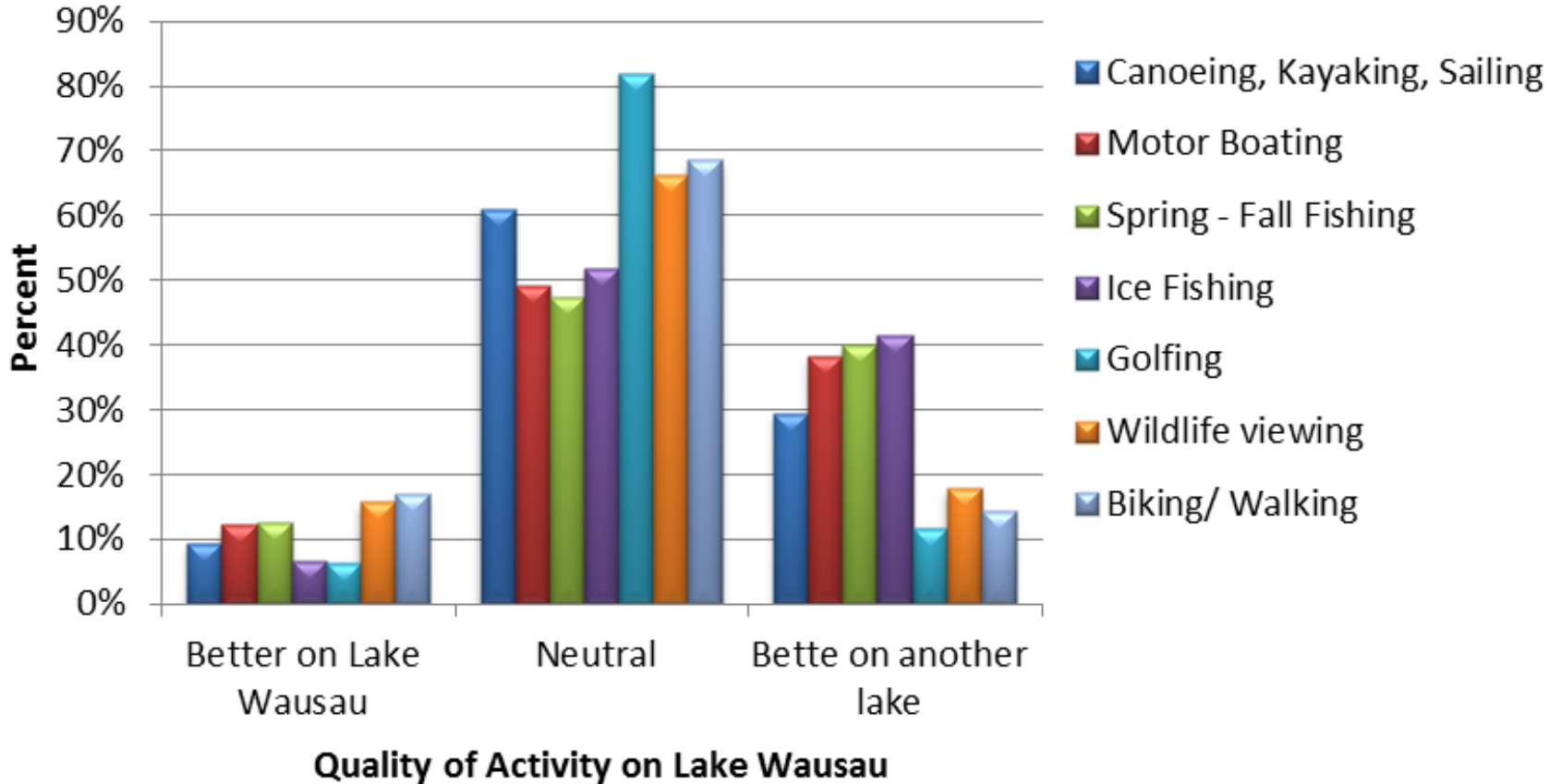
The defining feature of those who hold this view is a **strong belief that Lake Wausau is dirty and seems to be getting worse**. They are the only group who to **disagree that water quality is improving** and are the most likely to believe that the condition of the lake is so bad that **it is now only safe to look at the water**. This view is supported by their perception of the **lake having a strong odor** and are the **least likely to feel safe eating fish from the lake**. Similar to group 3 members of this group see a lack of recreational facilities on the lake, but are largely motivated by the need to enhance fish and wildlife habitat. They are also **the most critical of local government's response** to the condition of the lake, but among the most supportive of DNR's involvement in managing these issues.

	Wausau	Schofield	Rothschild	Rib Mtn	Near Lake
Group 0	10.87%	6.90%	6.56%	12.16%	1.33%
Group 1	36.96%	56.90%	54.10%	41.89%	52.00%
Group 2	21.74%	10.34%	16.39%	20.27%	17.33%
Group 3	17.39%	10.34%	16.39%	12.16%	14.67%
Group 4	13.04%	15.52%	6.56%	13.51%	14.67%
	100.00%	100.00%	100.00%	100.00%	100.00%



## Recreation Results:

-Generally there was less recreational activity than anticipated on the Lake, resulting in modest number for participation & expenditure in activities



# *Sustainable Watershed Management*

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Capacity

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# AMHERST MILLPOND: Making Community Decisions



**EXAMPLE**

Aaron Thompson, Ph.D.

Assistant Professor of Natural Resource Planning,  
College of Natural Resources UW - Stevens Point  
Land Use Specialist, UW-Extension Center for  
Land Use Education



*existing conditions*



# Questions for the community

## Complex Challenge – Interdependent Issues

Big Questions: How do community members feel –

About their Dam?

About their Pond?

About their River?

About their Town?

2009 Public Opinion  
Survey (Amherst  
Millpond Management  
Planning Process)

### **COMPLICATED, POTENTIALLY DIVISIVE DECISION:**

Three opinions: [assuming they are speaking of three people in the household] 2 want pond left the way it is and 1 wants the pond restored and dam removed.



# *What we know about dam removal*

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## **Better, less divisive decision can be made:**

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**AVOID QUICK DECISIONS:** a community needs adequate time to understand dams, explore options, and work toward consensus

**PROCESS IS GOAL FOCUSED:** a community that first decides on what values are the most important and works toward these goals can benefit from a more flexibility and a broader range of options; the alternative usually forces a community into a false choice between fixed options

**DECISIONS MUST BE COMMUNITY DRIVEN:** use appropriate expertise when needed, but community members must be allowed to decide what is best and how to move forward





# *Collaborative Process: LEARNING*

## **Public Meetings / Field Trips:**

*Opportunities to gather information and collect meaningful input*



**Resource Teams:** *Small groups tasked with answering key questions / collecting input and reporting back to the community*



# LEARNING: Example Goal Development

Solitude

Someplace to go enjoy nature and the quiet for a walk

I enjoy taking my children over to the pond to look at wildlife and just enjoy the water.

Access

Silent Sports Recreation

A nice quiet fishing, row boat lake.

It has been a part of Amherst history for a long time ...

Respect History

Beautiful Views from Downtown

The scenic view ... by the dam in Amherst

Enjoy watching kids fishing below dam

Childhood Experiences



# *Collaborative Process: VISIONING*

*Can the coming changes (with or without the dam) result in a better future?*



**Public Visioning Sessions:** *Intensive community work sessions designed to get citizens directly involved in solving complex problems*

**Youth Involvement:** *and it can't hurt to involve those who most intensively use the resource too!*





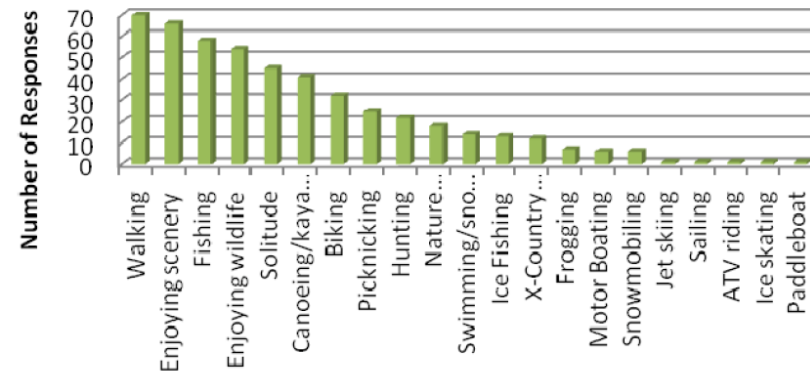
# VISIONING: *Desired Future Conditions*

Can additional views of the pond / river be opened or enhanced to take advantage of the resource?

What needs to be done to enhance water-based recreation?

Is there a possible way to create a trail loop for enhanced walking trail network?

**What Activities Do You Enjoy At/Near the Millpond?**





# *Collaborative Process: GROUNDING*

**Consultation:** *Fact finding exploring costs, impacts, and feasibility of alternative solutions*

*\*\*Visualizations created for information purposes only.*



*visualization: step 2*

**Visualizations:** *Photo simulations that provide an “educated guess” at what different options would look like and how they would function compared to existing conditions.*

# *Collaborative Process: DECIDING*



**Developing Criteria:** *Use of goal-defined criteria to assess alternative land use scenarios*

**Seeking Input:** *Many ways to seek public feedback – emphasis needs to be on what the community as a whole will support, not simply who has the loudest voice*

*-Household surveys, resource commissions (quasi-governmental decision making boards), public meetings, advisory votes*

# Collaborative Process: **IMPLEMENT & ADAPT**

Remember ... it's a process!



Sources:

Johnson, S.E., Graber, B. 2002. Enlisting the Social Sciences in Decisions About Dam Removal. *BioScience* 52 (8): 731-738.

Margerum, R. 2011. *Beyond Consensus: Improving Collaborative Planning and Management*. Cambridge, MA: The MIT Press.

The success of rural planning efforts is a function of public support, therefore we must incorporate the priorities of a diverse group of stakeholders. In addition, we need to recognize the key role that landowners play in this process and work with them to help answer these tough questions.

WATER QUALITY

RENEWABLE ENERGY

WIND TURBINES

ETNAHOL

SPRAWL

FORESTS

CAFOs

FOOD PRODUCTION

WILDLIFE HABITAT





Looking back, we see the dramatic transition American agriculture has experienced over the last two generations. As a result, we can expect that new challenges will affect farming and the rural landscape. Whether these challenges represent new economic opportunities, like the development of wind farms, or increased public attention to environmental management of farmland, these factors are likely to impact how farmland is valued and managed in Tippecanoe County.

As part of an on-going research project, we would greatly appreciate your participation in this survey to help us understand the views and priorities of the local agricultural community. While your participation is voluntary, as a farmer, producer, or landowner in Tippecanoe County your input is essential to finding responsible, practical ways to meet these challenges.

Due to the complexity of the issues we are asking about, it will take approximately twenty-five minutes to respond to our questions. Please complete as much of the survey as possible; however, you are welcome to skip questions that make you feel uncomfortable. We understand that this is asking a lot of you, but your response is extremely valuable to beginning this important work in Tippecanoe County.

If you have any questions about the survey or this research, please feel free to contact us using the information provided below. Thank you for your help.

Sincerely,

A handwritten signature in black ink, appearing to read 'Aaron W. Thompson'.

Aaron W. Thompson  
Graduate Research Assistant  
E-mail: awthomps@purdue.edu

A handwritten signature in black ink, appearing to read 'Linda Stalker Prokopy'.

Linda Stalker Prokopy, Ph.D.  
Assistant Professor of Natural Resources Planning  
E-mail: lprokopy@purdue.edu  
Phone: 765-496-2221

Department of Forestry and Natural Resources  
Purdue University

## Survey of Farmers

A census of all landowners who have received subsidy payments on farmland in Tippecanoe County, Indiana.

- Mail survey AND drop-off /pick-up

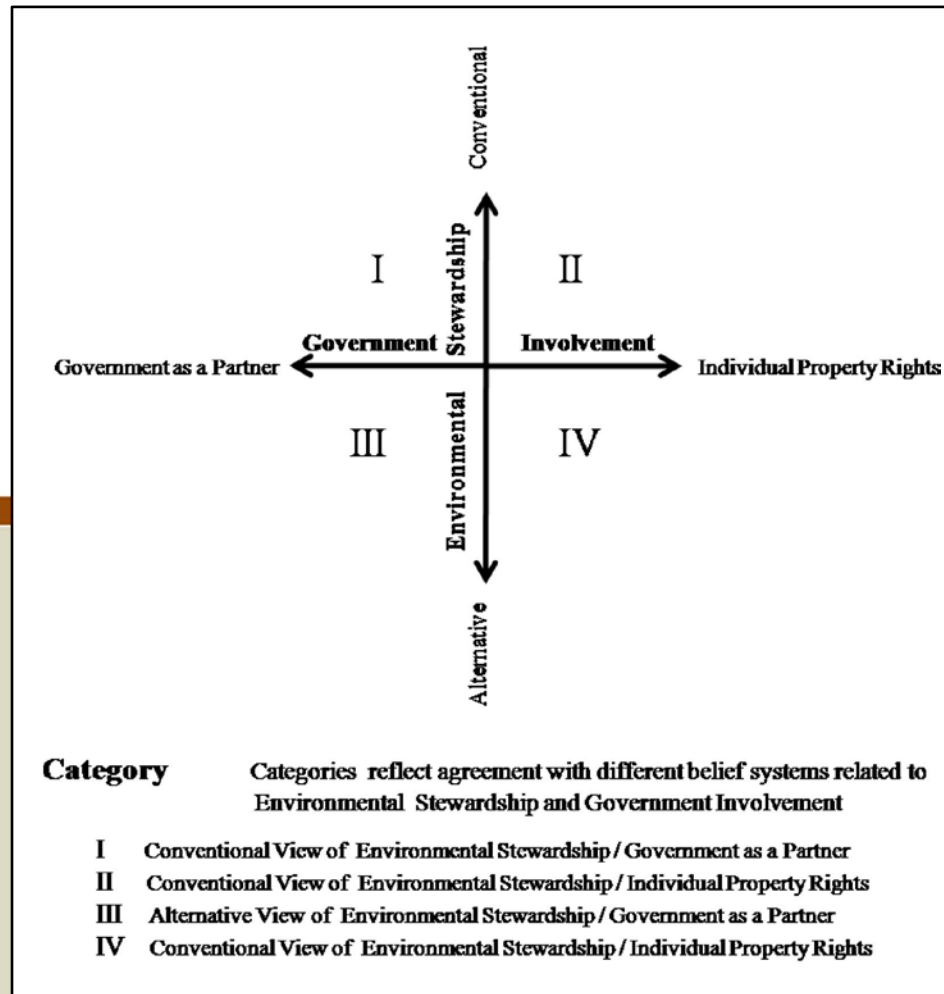
## Methods

- Sample size = 715 individuals
- 429 surveys were returned either fully or partially completed, resulting in a response rate of 60.0%.



What attitudinal factors influence farmers' willingness to participate in efforts to restore the rural landscape?

## Scale Development



### Environmental Stewardship

- (Positive Views) Alternative Environmental Stewardship scale
- (Negative Views) Conventional Environmental Stewardship scale

### Government Involvement

- (Positive Views) Government as a Partner scale
- (Negative Views) Individual Property Rights scale

# Categorizing the Diversity of Belief Systems

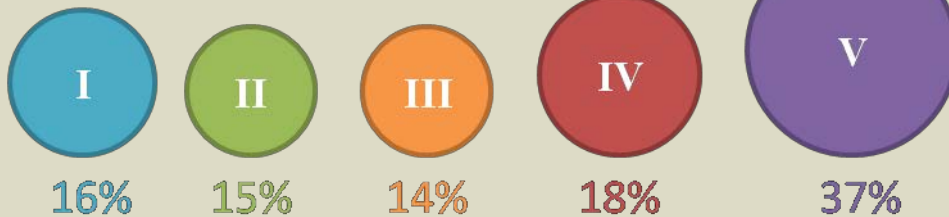
**Objective:** Develop a typology of farmers based on their underlying belief systems and explore the differences that exist between and within categories.

## Method: 2-step Cluster Analysis

- Conducted in SPSS
- Variables: 4 belief system measures
- Automatically determine the number of clusters

## Cluster Analysis

Resulted in the identification of five unique belief system categories:



**Proportion of respondents in each category represented by area**

*Missing Data prevented categorization for 113 respondents;  
Valid responses, N=302*

- Category 1: Reluctant partners, conflicted environmental attitudes
- Category 2: Government averse, production focused
- Category 3: Willing partners, conservation focused
- Category 4: Government averse, conservation focused
- Category 5: Non-polarized farmers

# Views of Rural Landscape Planning

Open-ended Survey Question:

“What do you believe is the most important issue facing the rural landscape and how do you think that it should it be addressed?”

- Responses developed into a Q-sort based on 5 themes:
  - 1) who should be allowed to participate, 2) what should be the focus of local planning efforts, 3) what approach would work best, 4) should solutions target landowners equally, and 5) how quickly should decision be made?

## *Phase 5*

Data Collection: Focus groups sampled from Belief System Categories

- Category 1: 3 participants
- Category 2: 7 participants
- Category 3: 10 participants
- Category 4: 7 participants
- Category 5: 7 participants

Scale  
Development

Relationship  
Testing

Categorizing Belief  
System Diversity

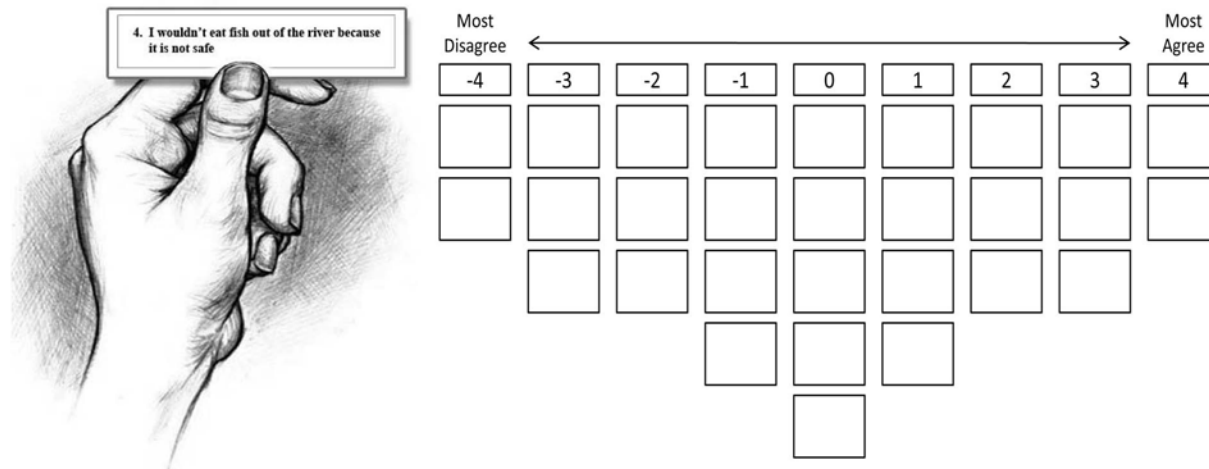
Applying the  
Typology

**Strategies**

# Q-methodology

- Identifies areas of agreement (consensus statements) and disagreement (distinguishing statements)
- Examines differences within the each belief system category
  - Statements reveal strategies that would be supported by members of each group.

Efforts to address issues in the rural landscape in Tippecanoe County (examples include farmland preservation, right to farm issues, water quality issues, and wildlife habitat connectivity) are more likely to be successful if ...



# Perspectives on Planning

*Areas of agreement*

I

**Category 1:** 48 individuals

(+2) Alternative ES

(+1) Conventional ES

(Neutral) Government as a Partner

(+1) Individual Property Rights

- All affected stakeholders (citizens, farmers, government officials, and experts) allowed to participate.
- Focus in on improving the quality of working lands.

## *Summary*

- **Category 01: Reluctant Partners, Conflicted Env. Attitudes**
  - Agreement with both measures of environmental stewardship and low variability in measures of government involvement

Scale  
Development

Relationship  
Testing

Categorizing Belief  
System Diversity

Applying the  
Typology

**Strategies**

# Perspectives on Planning

## *Areas of agreement*

II

### **Category 2:** 45 individuals

(Neutral) Alternative ES

(+1) Conventional ES

(-2) Government as a Partner

(+1) Individual Property Rights

- Decisions should not be left to local officials
- Approach should emphasize regular meetings and providing small groups of neighboring landowners with incentives to work together to
- Focus is on improving the quality of working lands.

## *Summary*

- **Category 02: Government Averse, Production Focused**
  - Additional information: More likely to be crop farmers and own more acreage than members of other belief system categories
  - Supportive of increased productivity and limiting government involvement on their farm.

Scale  
Development

Relationship  
Testing

Categorizing Belief  
System Diversity

Applying the  
Typology

**Strategies**



# Perspectives on Planning

*Areas of agreement*

III

## Category 3: 42 individuals

(+2) Alternative ES

(-1) Conventional ES

(Neutral) Government as a Partner

(-1) Individual Property Rights

- All landowners should be allowed to participate
- Approach should emphasize addressing issues that affect the entire county
- Focus should be on the preservation of farmland

## *Summary*

- Category 03: **Willing Partners, Conservation Focused**
  - Additional information: More likely to less conservative than members of other belief system categories
  - Value preserving farmland and are more supportive of government involvement in managing the land

Scale  
Development

Relationship  
Testing

Categorizing Belief  
System Diversity

Applying the  
Typology

**Strategies**

# Perspectives on Planning

*Areas of agreement*

IV

## Category 4: 54 individuals

- (+2) Alternative ES
- (-1) Conventional ES
- (-1) Government as a Partner
- (+1) Individual Property Rights

- Experts should not be allowed to determine solutions without input from other stakeholders
- Approach should emphasize regular meetings
- Focus is on protecting key environmental areas

## *Summary*

- Category 04: **Government Averse, Conservation Focused**
  - Additional information: More likely to be landlords only than members of other belief system categories
  - Supportive protecting key environmental areas; however, also value individual property rights (limited government involvement)

Scale  
Development

Relationship  
Testing

Categorizing Belief  
System Diversity

Applying the  
Typology

**Strategies**

# Perspectives on Planning

*Areas of agreement*

V

## Category 5: 113 individuals

- (+1) Alternative ES
- (Neutral) Conventional ES
- (Neutral) Government as a Partner
- (-1) Individual Property Rights

- Addressing problems can not be left up to individual landowners
- Focus is on improving the quality of working lands.

## *Summary*

- Category 05: **Neutral (Non-polarized) Farmers**
  - Generally express neutral views of both environmental stewardship and government involvement

Scale  
Development

Relationship  
Testing

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System Diversity

Applying the  
Typology

**Strategies**

# ENGAGING FARMERS IN RURAL LANDSCAPE PLANING

## Practical Lessons:



Lesson #1: Need to meet farmers where they're at ... create opportunities for dialogue



Lesson #2: Recognize and respond to diversity



Lesson #3: Get them involved – farmer led wq sampling

## Conclusions



Lesson #4: Share decision making authority

# Questions?

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