Opportunities for and Barriers to Collaborative Water Resource Management

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Overview

- Context for research
  - Including lessons from previous research
- Question driving our research
- What we heard
- Opportunities and barriers
- Some concluding observations
- Goal for today: generate discussion and ideas about council's work, challenges faced as water availability is debated and management outcomes sought

Context

- Changes in Michigan's statutes for implementation of the Great Lakes Compact
  - MI was the most recalcitrant in meeting responsibilities under previous agreements
  - MI faced the largest change in water policy, so changes have been difficult
- MI has gone the furthest in meeting both the spirit and letter of the compact
  - Implementation is still a challenge

Context:

- Great Lakes states don't want Great Lakes water transported out of the basin.

Context:

- Restrictions on diversions limited by Commerce Clause of the U.S. Constitution
- If a state is to restrict water diversions, two standards must be met:
  - Restriction cannot be for the economic protection of in-state interests
  - State must treat in-state and out-of-state interests evenhandedly

Context:

- Principle argument against diversions: protecting Great Lakes aquatic and terrestrial ecosystems
- Great Lakes states cannot say “Do as we say, not as we do.”
- Withdrawals of water within the Great Lakes basin must be protective of Great Lakes aquatic and terrestrial ecosystems
- Each state defines protection (no adverse resource impact)

For Michigan, three questions drove water debates and decisions :

1. How much water is there?
2. How can withdrawal of water negatively affect ecosystems?
3. How much negative effect are we willing to live with?

How much water is there?

- Surface water flow data
- Ground water inventory and mapping
- Surface water and ground water are connected across most of Michigan

How can withdrawal of water negatively affect ecosystems?

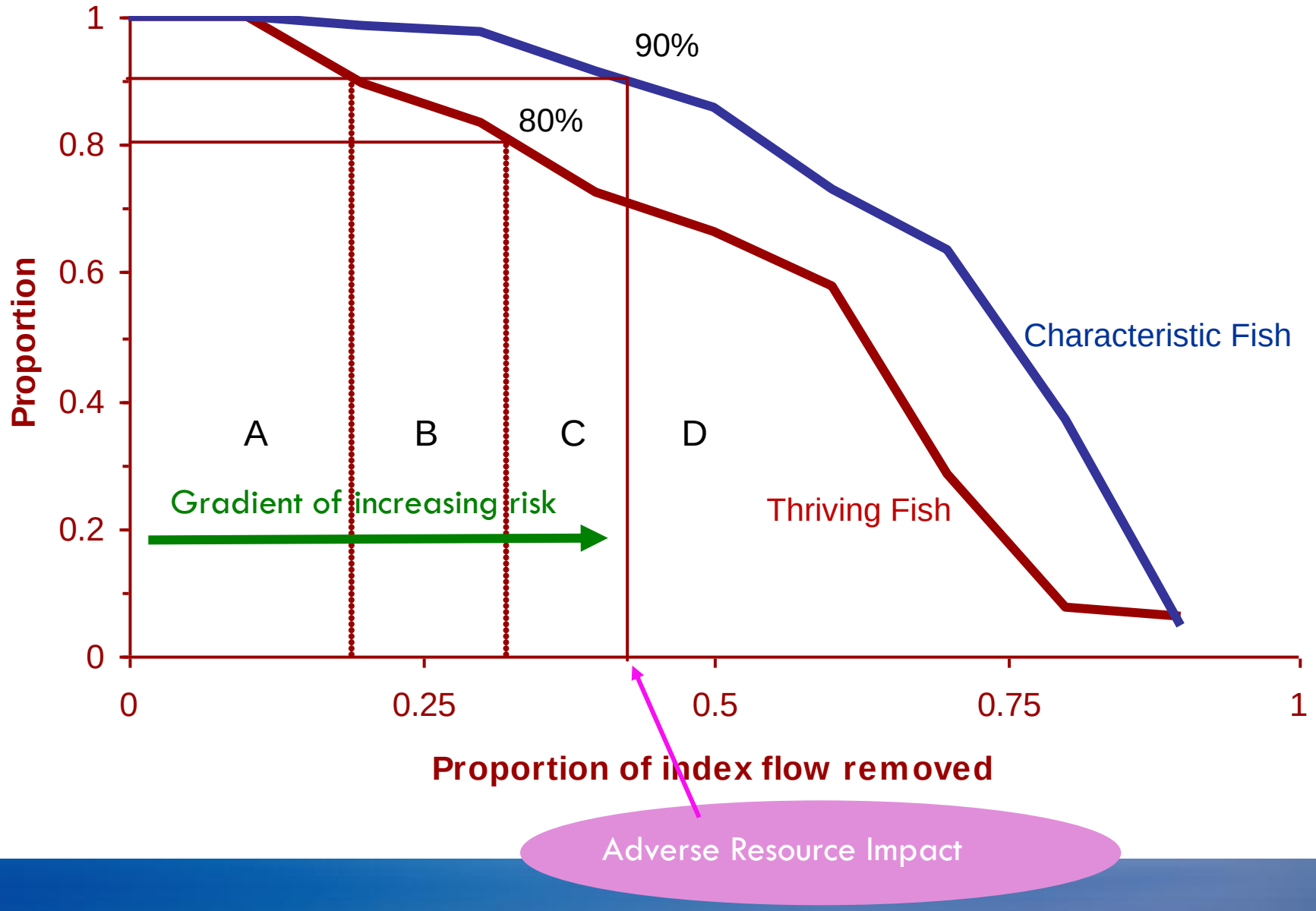
- Best research for Michigan that connected water availability and ecology was about stream flow and fish.
- Fish health as an indicator of ecological health
- If water levels drop low enough, fish populations are negatively affected

"It's not really about the fish. They just represent the neighborhood."

-- Jon Allan

How much negative effect are we willing to live with?

- This is a social question , which makes it a policy question.
- Underlying question is: who gets to decide?
- Legislature asked statewide council to come up with recommendations


1
0.8
0.6
0.4
0.2
0
Proportion
90%
80%
Characteristic Fish
Thriving Fish
A
B
C
D
Gradient of increasing risk
0
0.25
0.5
0.75
1
Proportion of index flow removed
Adverse Resource Impact

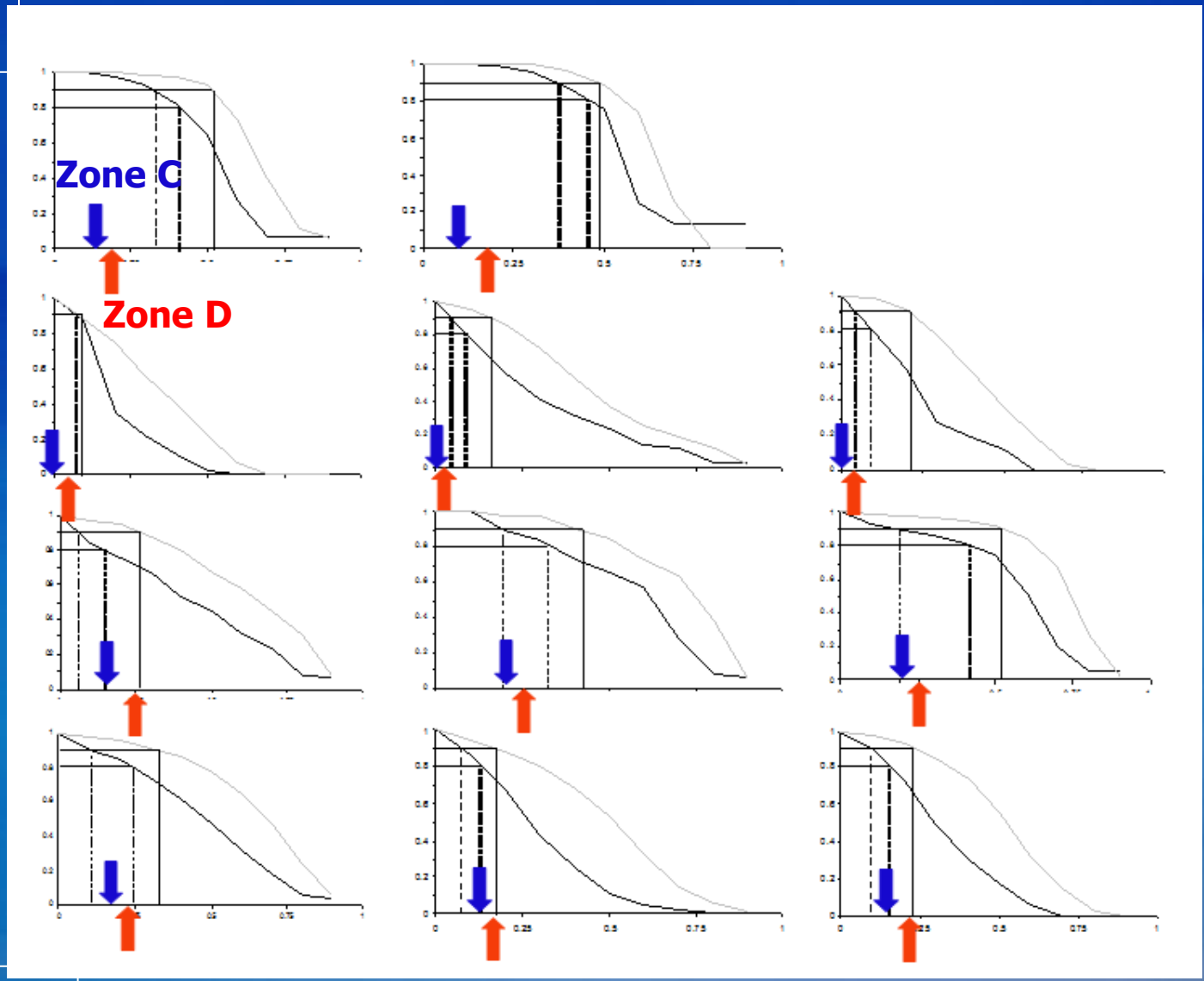
Ground water influence on stream

Cold

Cold transitional

Cool

Warm



Size of watershed drained

Streams

Small rivers

Large rivers

One more question:

- If water is not infinite, and some portion of it is now set aside for ecosystem protection (a.k.a. Great Lakes Compact implementation), how is the remaining water to be divided among or shared by competing users?

Legislature's answer: MCL 324.32725

(1) All persons making large quantity withdrawals within a watershed are encouraged to establish a water users committee to evaluate the status of current water resources, water use, and trends in water use within the watershed and to assist in long-term water resources planning. A water users committee may be composed of all registrants, permit holders, and local government officials within the watershed.

(3) If the department determines by reasonable scientifically-based evidence that adverse resource impacts are occurring or are likely to occur from 1 or more large quantity withdrawals, the department shall notify the water users committee in the watershed or shall convene a meeting of all registrants and permit holders within the watershed and shall attempt to facilitate an agreement on voluntary measures that would prevent adverse resource impacts.

Research suggests collaborative resource management is possible in some situations and may be a better choice than imposition of external allocation decisions (Elinor Ostrom, Nobel Laureate).

Our theoretical foundation:

- Michigan's water is a common pool resource
  - a finite resource with interdependence between users
  - the potential exists for use by one to reduce the availability of the resource for use by another

- A common pool resource dilemma occurs when the collective outcome of use could be improved with alternative institutions

Our theoretical foundation

- Institutions are the formal and informal rules that articulate relationships between people
- Institutions define a set of choices available to resource users
- Different institutions produce different choices

Our research question:

- How are Michigan's water users situated to take on the task of collaborative water resource management?

From prior research, what affects collaboration?

- Characteristics of the resource system
  - Size
  - Predictability
  - Indicators of common pool resource conditions

From prior research, what affects collaboration?

- Characteristics of the user group
  - Size
  - Boundaries
  - Shared norms
  - Social capital
  - Leadership
  - Homogeneity of interests and identities
  - Past experience with organizations

From prior research, what affects collaboration?

- Connections between resource systems and user group characteristics
  - Location of users and the resource
  - Dependence of users upon the resources
  - User demand
  - Fairness of allocation

From prior research, what affects collaboration?

- External environment
  - Relevant external markets
  - Power of local authority
  - Supportive sanctioning institutions
  - External aid for conservation activities
  - Nested levels of governance

Our research:

- Focus groups held during 2011
- Three with agricultural irrigators
- Three with municipal water utility managers
- Three with golf course superintendents

- Why not other industries that self-supply?
  - Heterogeneity

Questions:

- Using ground water or surface water or both?
- Who else is using same water source (aquifer, stream, etc.)
- Have you experienced low water situations that caused you to reduce your water use?

Questions:

- Hypothetical: a stream in your area has been consistently below the acceptable flow level designated by law. This requires DEQ to convene large quantity water users in the watershed to seek agreement on a way to eliminate the negative effects from excessive water withdrawals. If you were called to participate, would you?

Questions:

- If reduced streamflow is not a temporary problem, permanent reductions in water withdrawals might be necessary. What options do you have to reduce your water use permanently?

- What challenges do you face in decisions to reduce water use?

Questions:

- DEQ can only contact those large quantity users who have registered their withdrawal, so there is a chance that some of the large users in your area might not be invited. How would that affect the deliberation?

Questions:

- By common law, riparian landowners have the right to withdraw water from a stream, and landowners have the right to withdraw water from a well (subject to doctrines of reasonableness and correlative use). But all waters users in a watershed cannot collectively withdraw so much water that low streamflow negatively affects fish populations.
- Hypothetical: a new water user could find that all available water is already being used.

Questions:

- If a neighbor approached you and asked if you would cooperative with other large quantity water users to free up water so that he or she could begin withdrawing water, how do you think you would respond?

- How is the situation where a new user asks existing users to reduce water use different from the situation where DEQ convenes water users to seek a reduction in use?

Principle similarities:

- Awareness of other users sharing the resource
- If all users who are part of the group do not participate, collaboration will not work
- Only one golf course experienced a water shortage because reservoir was drained
- Difficult to imagine a water shortage when surrounded by Great Lakes
- All have options available to reduce water use, but timing of decision matters
- Financial stress would make deliberations difficult
- Hesitant to accommodate new users

Principle differences:

- Agricultural irrigators less trusting of externally imposed regulations; other groups described compliance with regulations as part of day to day activities
- Each group thought a different group would probably be biggest contributor to any problem
- Some municipalities obtain water from other municipal systems, so defining “user group” may be difficult

Opportunities and barriers:

- Predictability of resource
  - Barrier if users are unable to anticipate and plan for resource conditions
  - Barrier if users mistrust available information on resource conditions
- Indicators of common pool resource conditions
  - Barrier if water users have not been negatively affected by others' use

Opportunities and barriers:

- Group Boundaries
  - Barrier if all large quantity water users aren't at the table
- Shared norms within group
  - Barrier when there is not a sense of shared responsibility for addressing problems
- Social capital
  - Opportunity: at least among similar types of users

Opportunities and barriers:

- Group Leadership
  - Opportunity for “leading by example”
  - Barrier if respected community leaders choose not to cooperate
- Homogeneity of interests and identities
  - Opportunity: no one wants Great Lakes water diverted outside the basin
- Past experience with organizations
  - Opportunity: users are members of other groups

Opportunities and barriers:

- Connections between location of users and the resource
  - Barrier if well users do not observe connection between their use and a stream some distance away
- Dependence of users upon the resources
  - Opportunity: will continue to need water so address the problem now
  - Barrier: financial burdens

Opportunities and barriers:

- User demand
  - Barrier: importance of agricultural production contracts and connection to irrigation
  - Barrier: customer expectations regarding golf course aesthetics
- Fairness of allocation
  - Barrier: overwhelming sense of prior use equals prior rights

Opportunities and barriers:

- External markets
  - Barrier if high commodity prices mean resistance to reducing irrigation
  - Barrier if reduced irrigation means golfers think course looks bad
  - Barrier if municipalities face financial burden of infrastructure and declining customer base

Opportunities and barriers:

- Power of local authority
  - Opportunity: DEQ looks to local users to agree on how to share water and prevent negative ecological effects
  - Barrier: DEQ responsible for monitoring streamflow/water withdrawals and trust is low
- Supportive sanctioning bodies and rules
  - Opportunity: common law riparian rights reinforced in statute
  - Barrier: Users looking for opportunity to collaborate may balk if state is too intrusive

Opportunities and barriers:

- External aid for conservation activities
  - Opportunity: Ongoing research on irrigation efficiency and some federal financial assistance
  - Opportunity: Industry-wide effort to teach golfers that color of greens is less important than how they putt
- Nested levels of governance
  - Opportunity: State water program is part of larger Great Lakes Compact and users want to prevent diversions.

Sharing water: questions at the heart of the matter

- Do we have to share?
  - Water is a finite resource
  - Demand is likely to grow
    - Greater need for irrigation with climate change
    - New residents/users
  - Availability is likely to decline
    - Best climate models suggest changes in seasonality and intensity of rainfall
    - Less rain when needed; more runoff and less infiltration

Sharing water: questions at the heart of the matter

- Who should decide how water is shared?
  - Research suggests common pool resource users can collectively manage resource successfully, if institutions are supportive
  - Other users, besides large quantity, have a stake
  - Trust issues between water users and DEQ loom large
  - Water users – how much water is there and how much do withdrawals affect fish?
  - DEQ – if water users reach agreement on sharing, will they honor the agreement so that negative impacts do not occur?

Sharing water: questions at the heart of the matter

- When should decisions about sharing be made?
  - Agreeing to collaborative management requires common recognition of a problem to be addressed and benefits of collaboration
  - What work needs to be done before Michigan's common pool water resources can be effectively managed by water users?
  - Failing to plan is planning to fail.

Questions?

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