The Challenge of Cooperation to Protect Water Quality

Moving from Conversation to Conservation & from Reports to Actions
Water Summit Working Group initiatives & the social science of behavior change

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Collaborators

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Dead Zones Are a Global Challenge

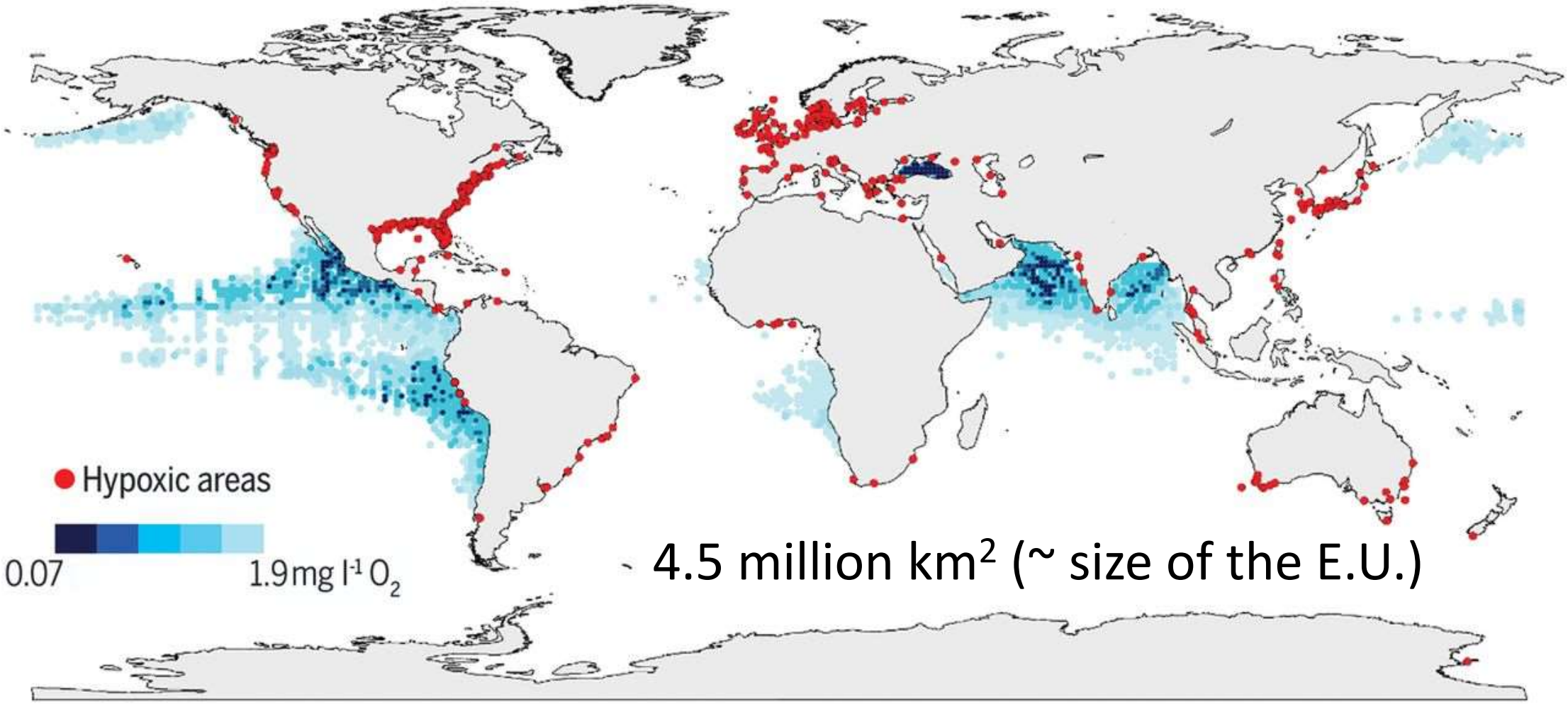


Figure: Breitburg et al. 2018

Big Challenges for Water Quality Protection

1

Generating Concern

Rethinking monitoring

2

Shared Understanding

Outreach with norms in mind

3

Empowered Response

Small wins by tracking progress

Monitoring Challenge: Out of Sight, Out of Mind

Farm Scale

Little monitoring and few points of reference (baseline or otherwise)

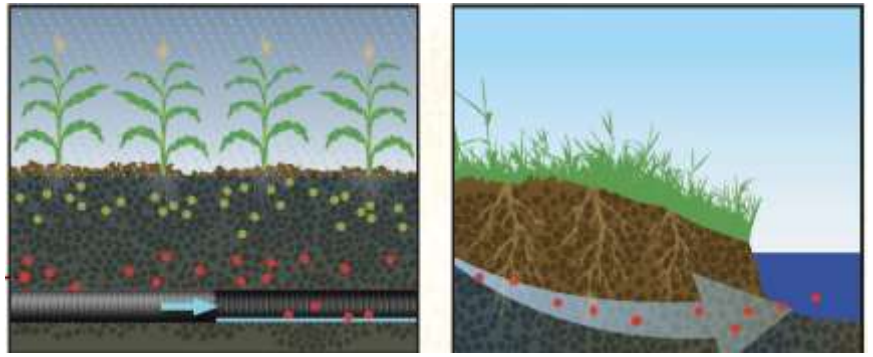
Watershed Scale

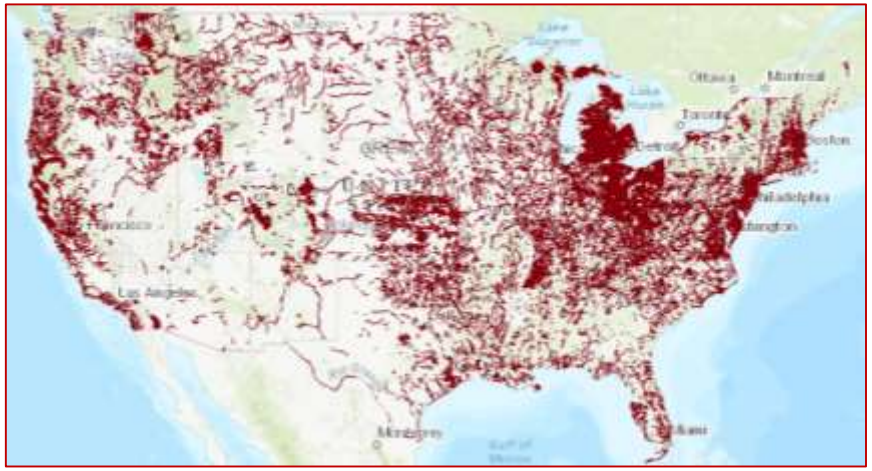
Psychological distance and ambiguity around how much any one farmer contributes

On potential nitrate loss:

*"I have no clue. … **if it's substantial, I would be pretty surprised** because I don't feel like we put too much of anything on."*

~ Farmer (ID1)





Top: Iowa Learning Farms (2019)
Bottom: DataBasin.org (EPA data)

How can we use monitoring data creatively?

What points are reference are useful or meaningful?

What baselines are available?

How can we account for a variety of interests and motivations?

Do we need different strategies for organizations and individuals?

In what ways can monitoring data be meaningful?

Can we make sense of it?

What do we learn from it?

Can we do something about it?

Everglades Forever Act: Cap-and-Cooperate

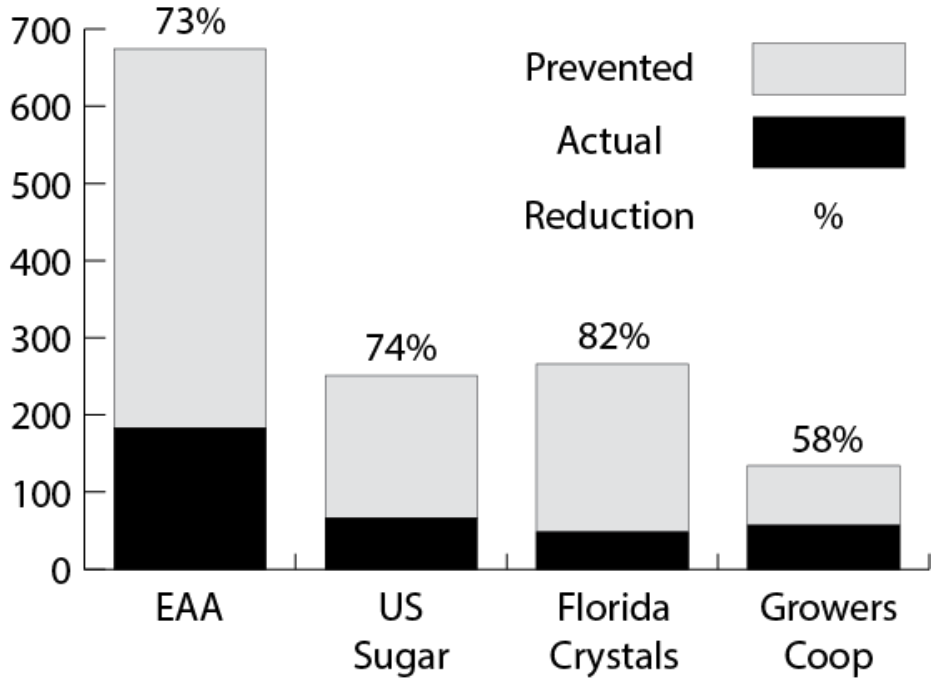
EAA

TP Loads

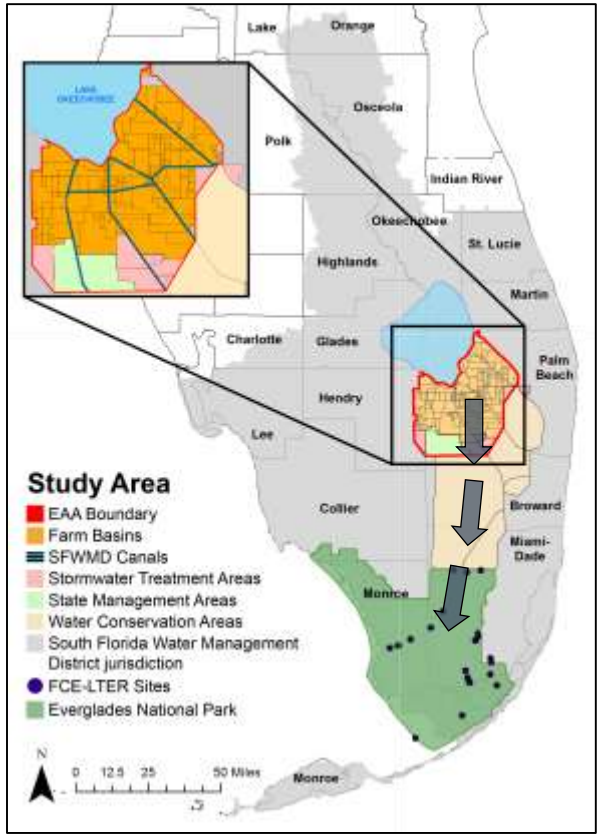
57%

LOWER UNDER COLLECTIVE COMPLIANCE

Prevented and Actual Yearly Total Phosphorus Loads (tons)



Everglades Agricultural Area



Yoder & Roy Chowdhury 2018; Yoder 2019

"After we had 60% reduction in the first year [of the BMP regulations], **it got everyone really excited**. Made people consider that they didn't need to pump so much. Pumping less saves me money and my yield didn't take a hit"

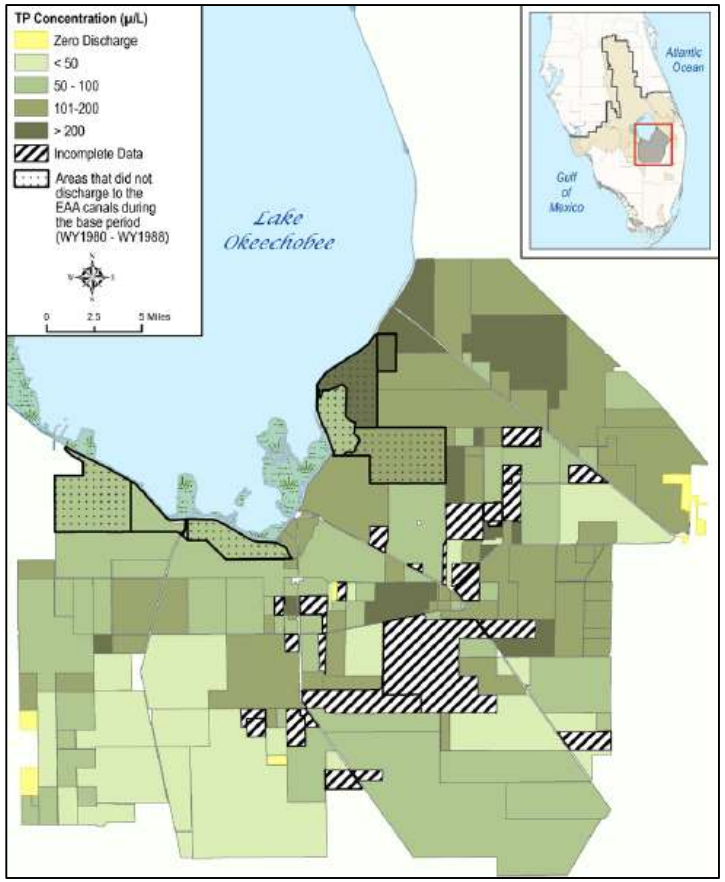
~Farmer, Interview #9

Yoder & Roy Chowdhury 2018

Monitoring Taps Into Reputational Pressures

"The [phosphorus reduction] numbers have been good. But initially, when the numbers looked good ***there was pride for the guys who had low numbers****, and peer pressure not to be the bad guys"*

~ State Official



Yoder & Roy Chowdhury 2018; Fig: Adorisio et al. 2016

Control Erosion

Soil Health

Fertilizer Retention

Cover crops offers a similarly effective response.

There’s no clear social norm in favor of cover crops yet.

Farmers offer mixed reviews on whether cover crops are worth it or not.

Roesch-McNally et al. 2018; Yoder et al. (2021)

Cautionary Tales vs. Learning Together

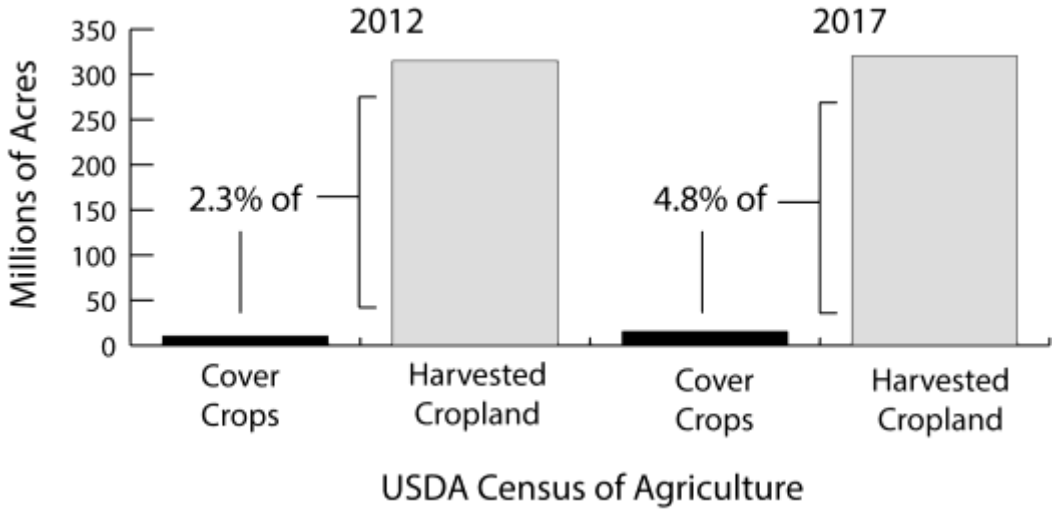
Cover crops can reduce fertilizer losses by 30-90% from tile drains.

Tonitto et al. 2006; Hanrahan et al. 2018

Adoption rates remain low nationally despite increasing.

Indiana has been a leader (10%)

National Cover Crop Adoption Rates



Farmers do a lot of talking, you know. Like the other year, when one farmer had a super cover crop, but then the voles and the slugs and everything else went at it, and he had to replant the corn three times…neighbors talk. ***You need to do something different than what he did*** (Farmer #2C).

Yoder et al. (2021)

Shared Understanding

- Indiana Conservation Partnership push for “soil health” is having a positive impact on farmers’ perceptions of cover crops

- Multiple, existing options that could explore more peer-based learning:
  - Field Days
  - Regional Conservation Partnership Program
  - Research Trials

- None of these pursue or use (to the best of my knowledge) a shared bonus or reputational approach. Farm management outcomes are visible, which can put pressure on farmers to avoid criticism.

Burton 2004

How can we generate a sense that our efforts matter?

Local governments don't have spare funds for watershed projects.

Land use zoning ordinances could work but need broad support.

Dedicated folks can often burn out.

Win-win approaches are crucial but challenging to come by.

Tracking progress can offer "small wins" as another empowering response

Iowa's watershed boards show how the issue is challenging, and also promising.

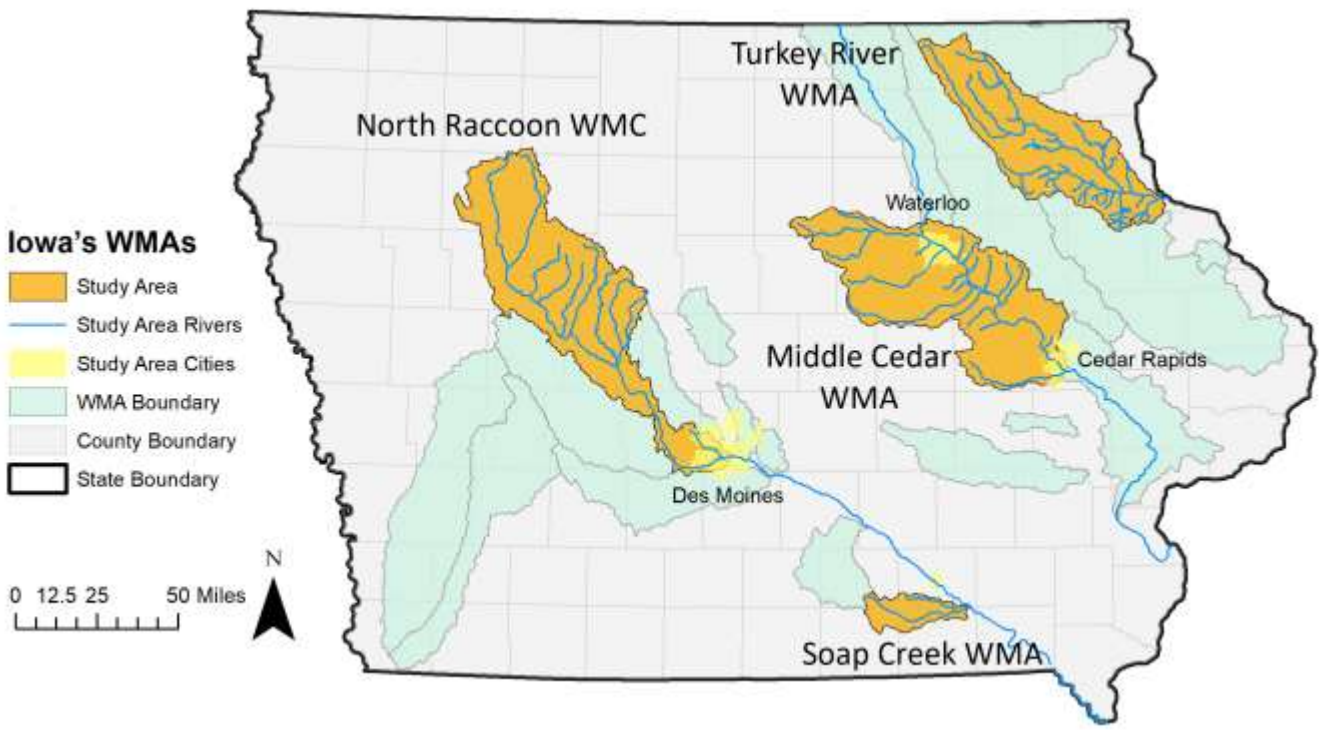
Iowa's Watershed Management Authorities

Board structure matters: Cities, counties, and SWCDs

Not all have clear roles, leads to inconsistent participation

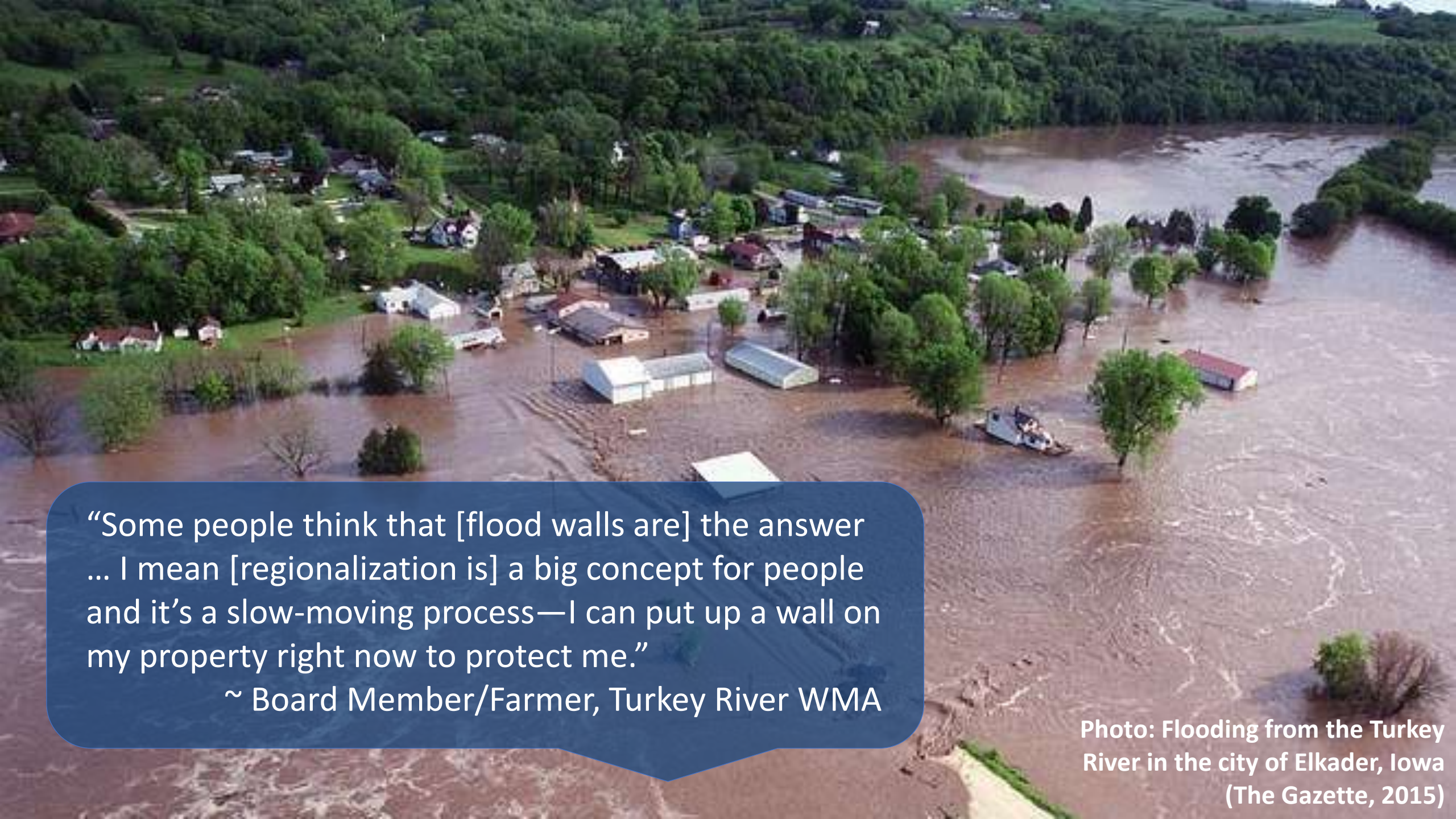
Watershed plans tend to be engineering documents

Need grants to fund to large infrastructure projects



	Middle Cedar	North Raccoon	Soap Creek	Turkey River
Year formed	2016	2017	1986	2008
Watershed acres	1,500,000	1,600,000	163,000	1,100,000
HUC size	HUC 8	HUC 8	HUC 10	HUC 8
Number of county boundaries crossed	10	14	4	8
Main agricultural land use	Row crops	Row crops	Pasture	Row crops and pasture
Largest city (by population)	Cedar rapids (130,000)	Des Moines (680,000)	Ottumwa (24,000)	West Union (2300)

Figures: Yoder et al. 2020

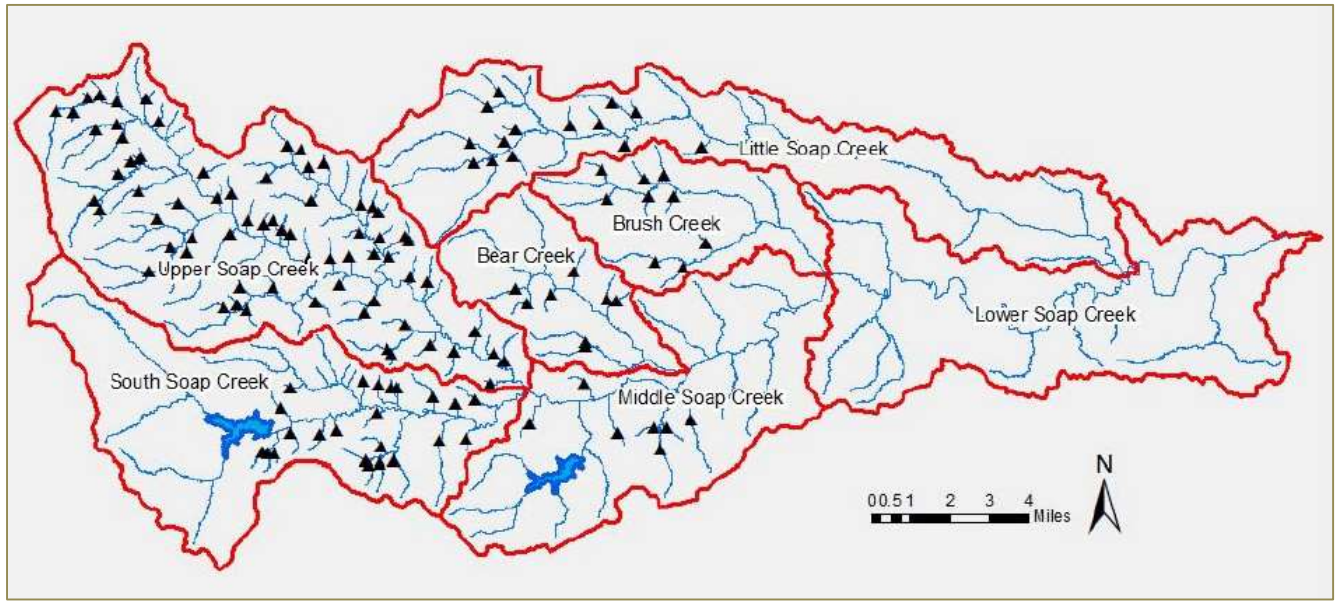


"Some people think that [flood walls are] the answer … I mean [regionalization is] a big concept for people and it's a slow-moving process—I can put up a wall on my property right now to protect me."

~ Board Member/Farmer, Turkey River WMA

Photo: Flooding from the Turkey River in the city of Elkader, Iowa (The Gazette, 2015)

Soap Creek WMA: Slow, But Steady



Built 132 of 152 farm ponds originally planned

Win-win based: water for livestock (upland pasture), downstream flood peaks reduced by 20%
(Iowa Flood Center 2016)

<u>Other Empowering Opportunities</u>

Partner cities > identify similar circumstances and projects

Road-side culverts to detain floodwater on pasture lands

Downstream partners help fund upstream projects for flood reduction

Image: Iowa Flood Center 2016

Recap: How Cooperation Matters

- **Generating concern by rethinking what "monitoring" can do**
  - Lots of entry points for being interested in clean water
  - Story maps, scorecards, fundraising thermometer, etc.

- **Convert reputational risks into learning opportunities**
  - Norms > focus on what people think they "should" do and how to account for this
  - Peer learning and trialing can increase knowledge and decrease fear of failure

- **Empowering people by creating small wins (e.g., tracking progress)**
  - Documenting the outcome matters so that we stick with it
  - Addresses classic collective action problem: don't think my efforts matter

Thank You

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