

Using Social Sciences to Inform Lake Management



DEB-1038759
Water Sustainability and
Climate

September 2018



Adena Rissman
Associate Professor, UW-Madison
Human Dimensions of Ecosystem Management



Investigating the relationships between society and environment, focusing on ecosystem management, conservation, and sustainable use

**How do social scientists
understand the world?**

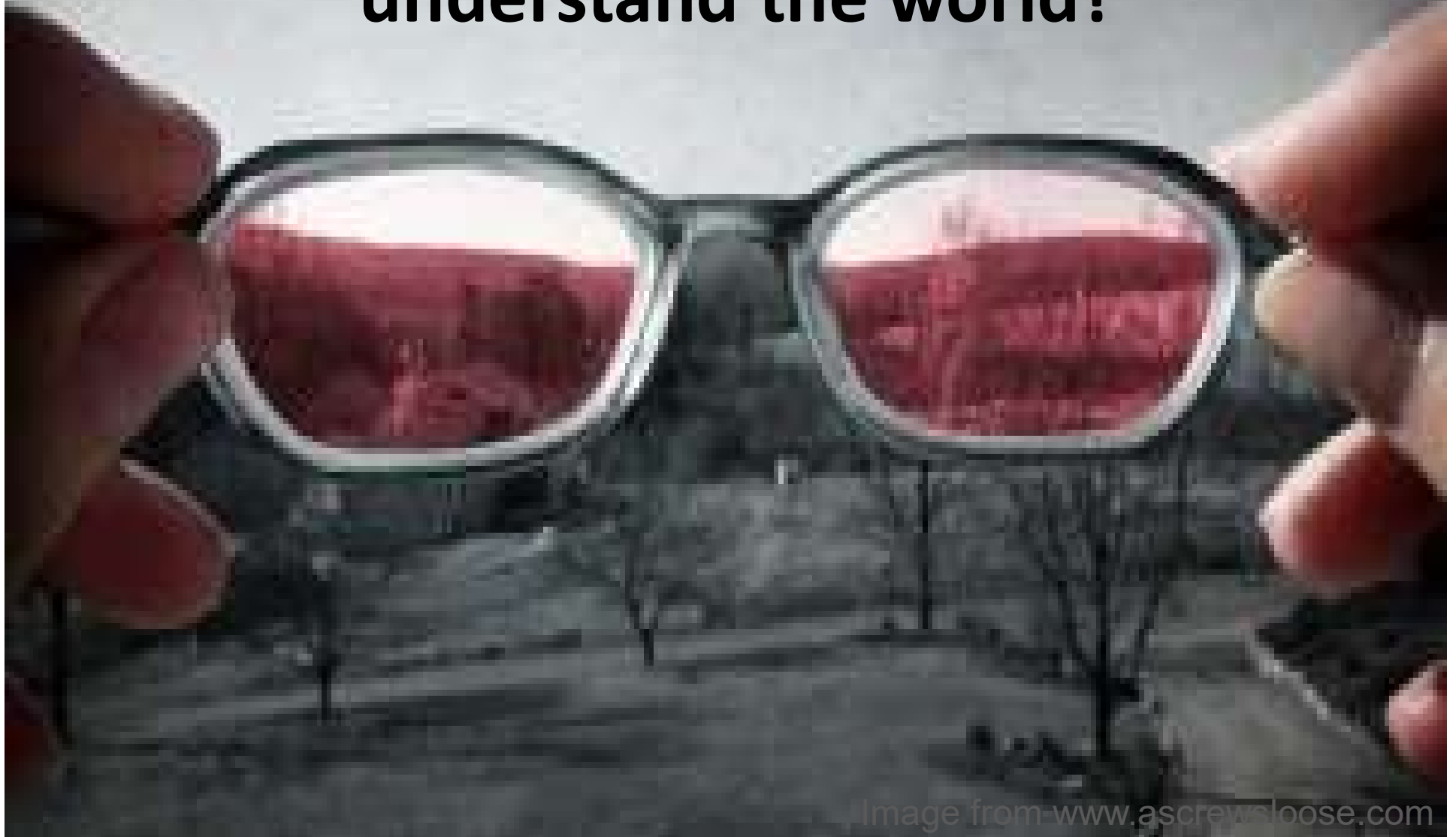


Image from www.ascrewsloose.com



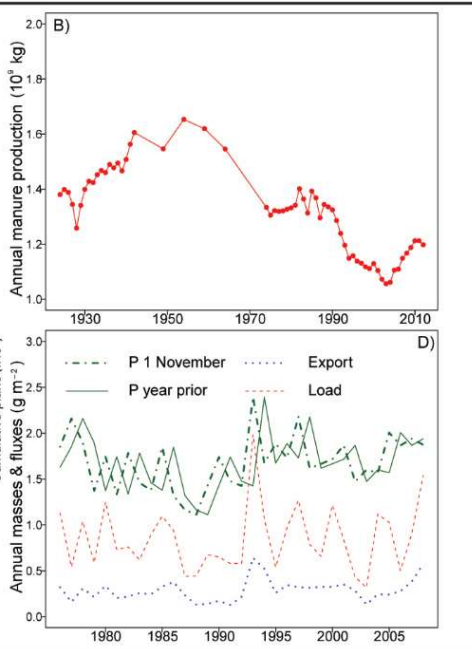
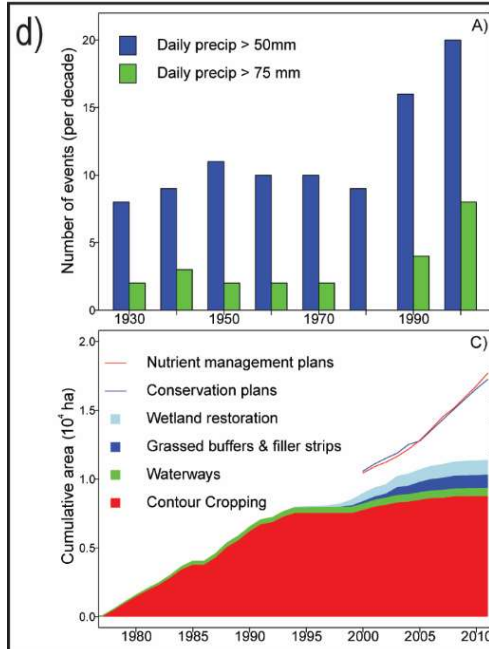
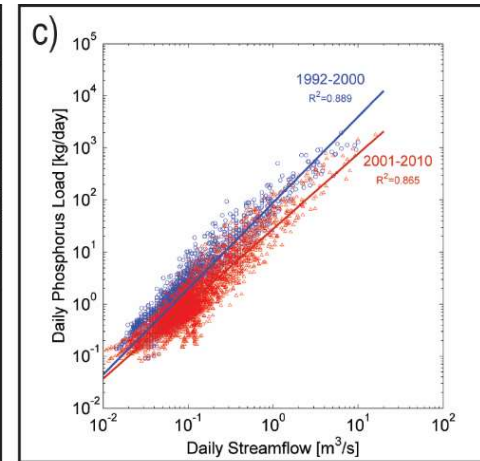
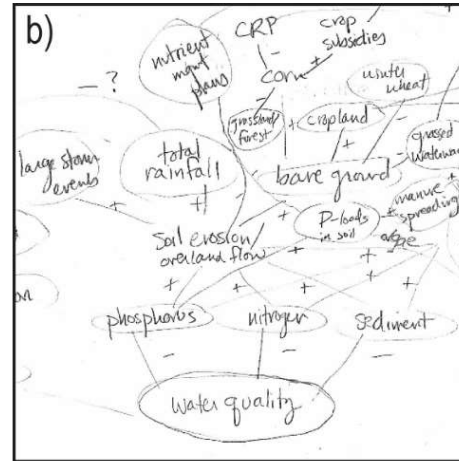
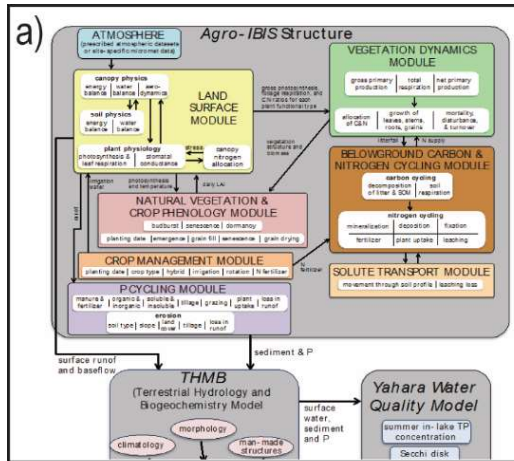


What questions do you have about:

- Individuals (farmers, anglers, owners...)
- Families (inheritance, life cycle...)
- Governance (policy, politics)
 - Civil Society Organizations (lake associations)
 - Public Organizations (government)
 - Private Sector Industries
- Markets (ag, housing, forest, fish...)
- Technology (boats, harvesters)
- Social structures (race, class, gender)

Related to **lake conditions, uses, history, threats, solutions, and opportunities?**

Methods for linking social and ecological information about lakes



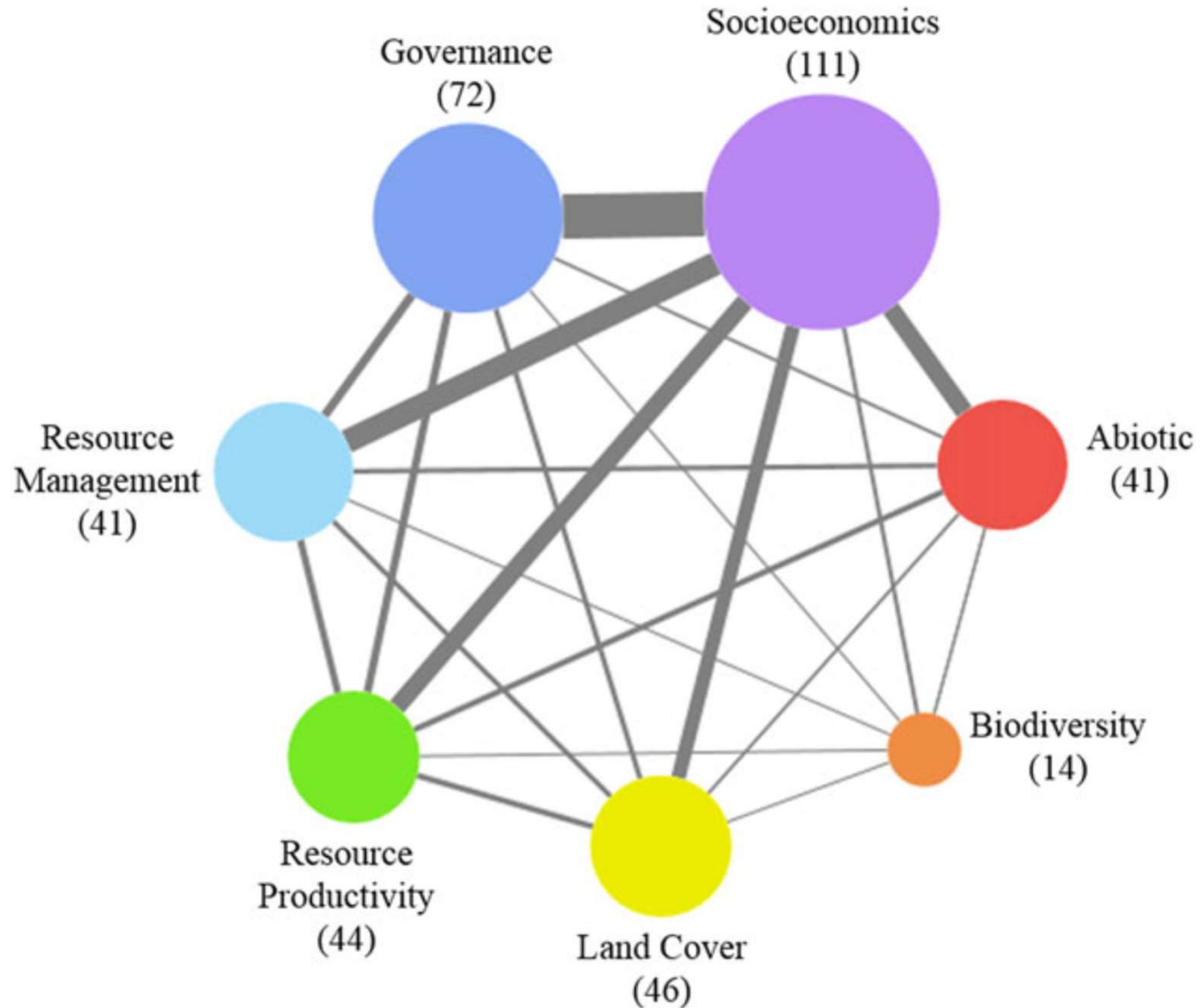


Social-ecological review

- How often are ecological variables incorporated in social-ecological systems research and what methodologies couple social and ecological variables?
- We reviewed 120 articles with the keyword “social-ecological system”

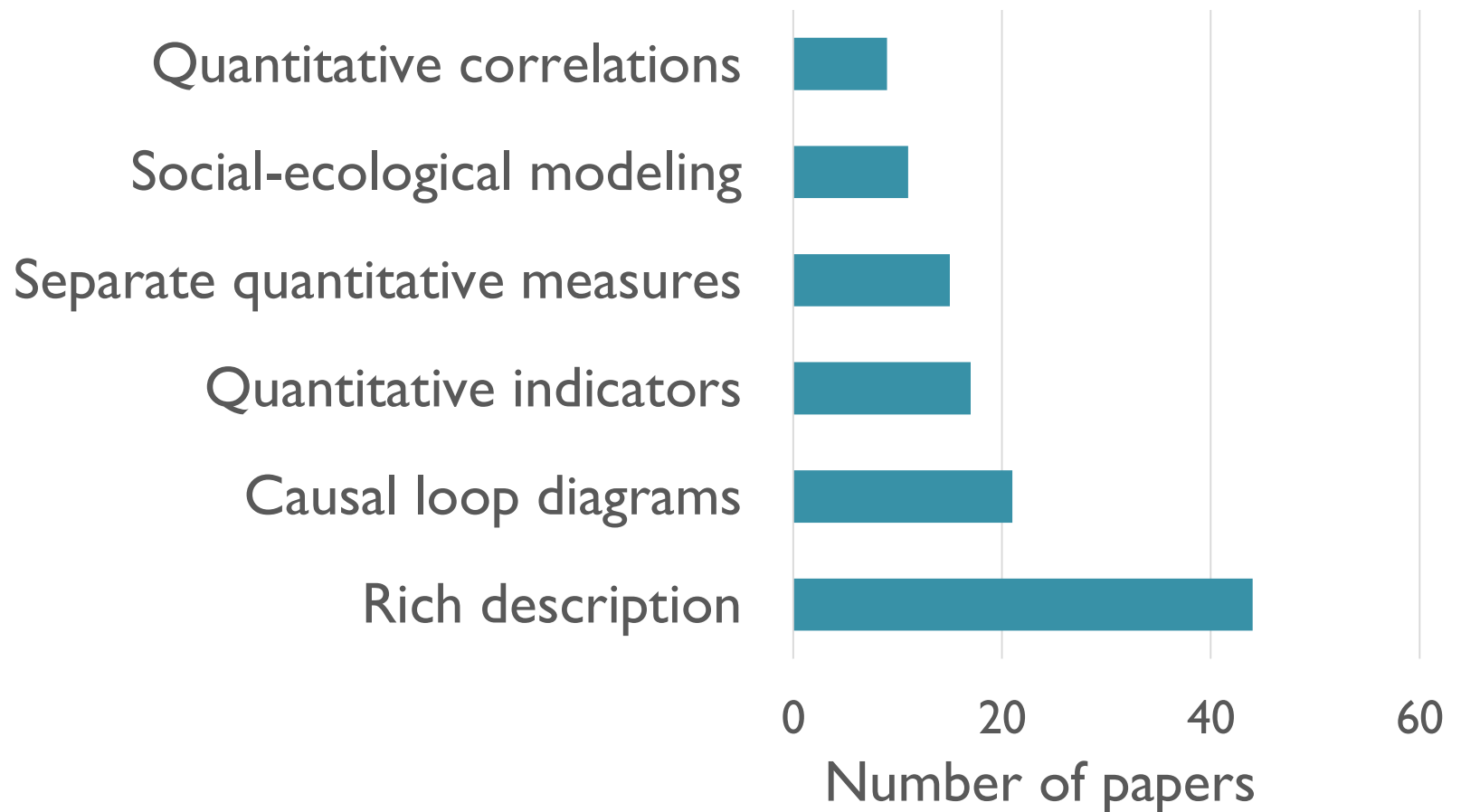


Variable connections



Bubble size = number of papers with each variable (n=120)
Line width = number of papers with each IV-DV connection (n=101)

Methods for Linking Social and Ecological Systems





What questions do you have about:

- Individuals (farmers, anglers, owners...)
- Families (inheritance, life cycle...)
- Governance (policy, politics)
 - Civil Society Organizations (lake associations)
 - Public Organizations (government)
 - Private Sector Industries
- Markets (ag, housing, forest, fish...)
- Technology (boats, harvesters)
- Social structures (race, class, gender)

Related to **lake conditions, uses, history, threats, solutions, and opportunities?**



My research group

- ❑ Natural resource policy and administration
 - Private land conservation and water quality (conservation easements, zoning, forest tax programs, water quality trading)
 - Across public-private divides
- ❑ Social and legal adaptation to environmental change and novel ecosystems; scenarios
- ❑ Use of science in natural resource management
- ❑ Ecological outcomes of conservation policy



Social science in the Water Sustainability and Climate project

- **Nonpoint pollution challenges overview** (Rissman & Carpenter 2015)
- **Policy mapping and spatial fit** (Wardroppe et al. 2015, Qiu et al. 2017)
- **YaharaWins survey and interviews** (Wardroppe et al. 2017)
- **Spatial data: privacy and public access** (Rissman et al. 2017)
- **Change over last 50-100 years in land use, policies, extreme storms** (Gillon et al. 2016)
- **Scenarios analysis** (Wardroppe et al. 2016)

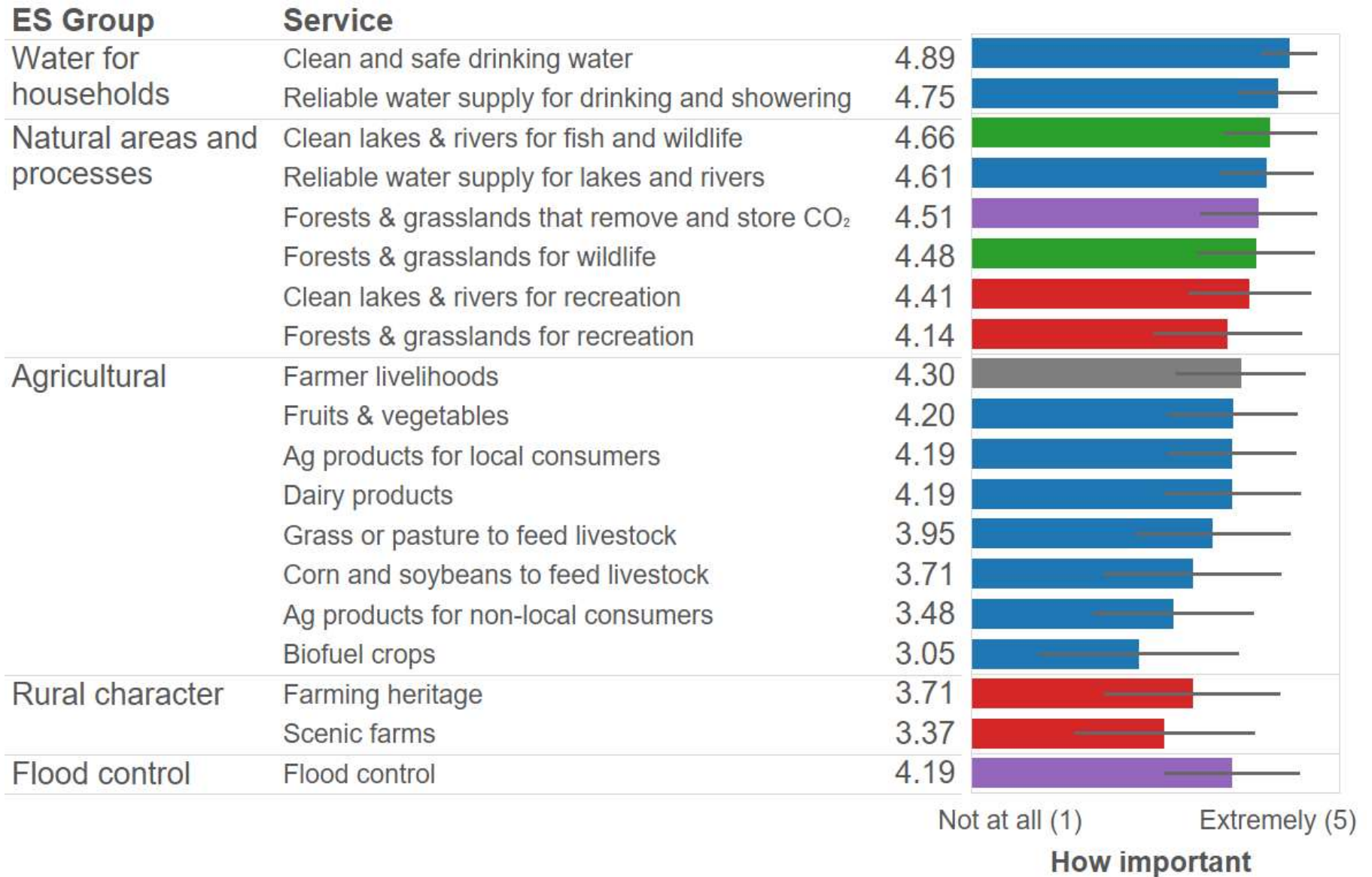


Public perceptions survey

- Fall 2015 survey of Dane County residents
- 1100 respondents, 52% response rate
- Mail survey with 4 waves and \$2 incentive

Rissman, Kohl, and Wadroppe. 2017.
Environmental Science and Policy

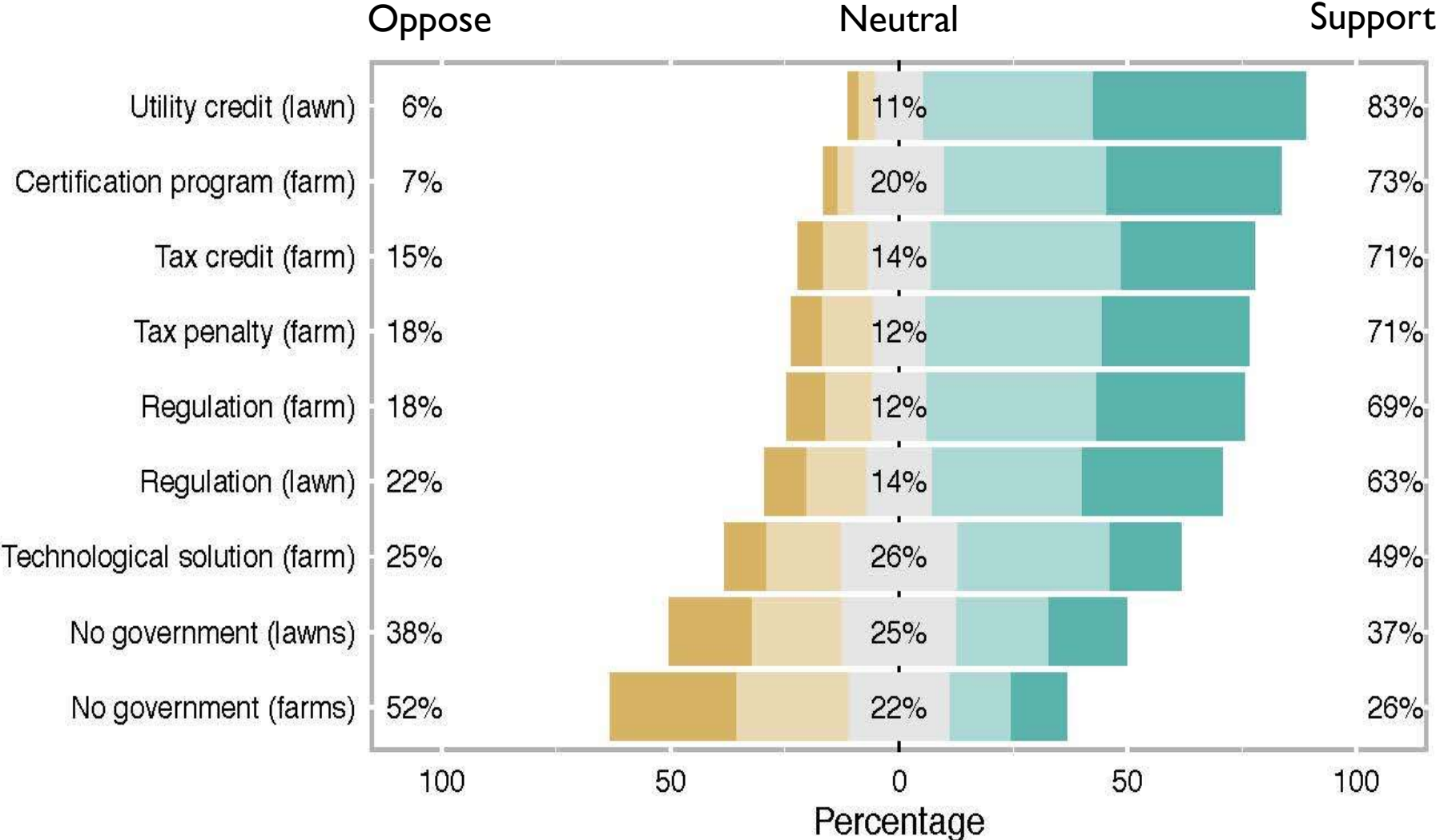
Dane County residents viewed water as the most important services in the region.



Millennium Ecosystem Assessment Groups

- Cultural
- Provisioning
- Regulating
- Supporting
- Other

Overall, Dane County residents supported water quality policies for runoff control on farms and lawns, and opposed relying on voluntary action without government for farms





Predictors of policy support

- Values about the role of government and society were the strongest predictors of policy support, followed by concern about runoff and self-interest (agricultural occupation, lawn owner)
- Regulatory approaches were somewhat polarizing, with more support from communitarians and less support from individualists.

Rissman, Kohl, and Wadropper. In press.
Environmental Science and Policy



Survey takehome messages

- Water quality is highly valued among urban and rural residents
- Residents support agriculture, especially farmer livelihoods, local food, fruits/veggies, and dairy
- Water quality policy support was high
- Policy support higher with positive view of government in society, high water quality concern, and no direct self-interest
- Regulatory rollback that removes government may not be popular
- Outreach should seek to align with diverse worldviews



Acknowledgements

- Sean Gillon, Chloe Wardropper, Sedra Shapiro, Ellen Geisler, Catherine Harris, Andrew L'Roe, Bethany Laursen, Jiaqi Lu, Emily McKinney, Sarah Wilkins
- Water Sustainability and Climate project, feedback from Steve Carpenter, Ostrom Workshop



UNIVERSITY OF WISCONSIN-MADISON

Water Sustainability and Climate
In the Yahara River Watershed



Research funded under
grant DEB-1038759
Water Sustainability and
Climate (Category 2)