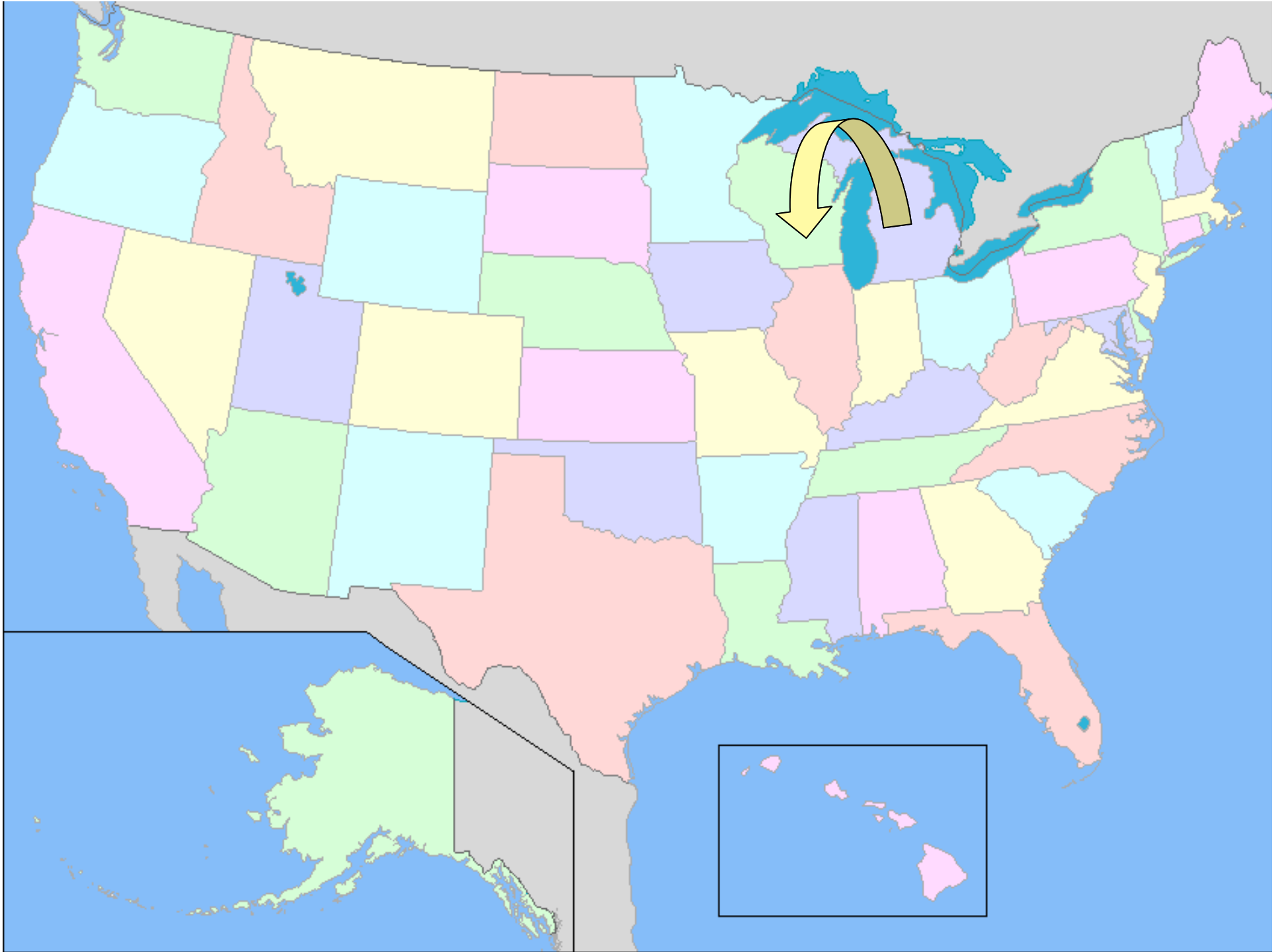




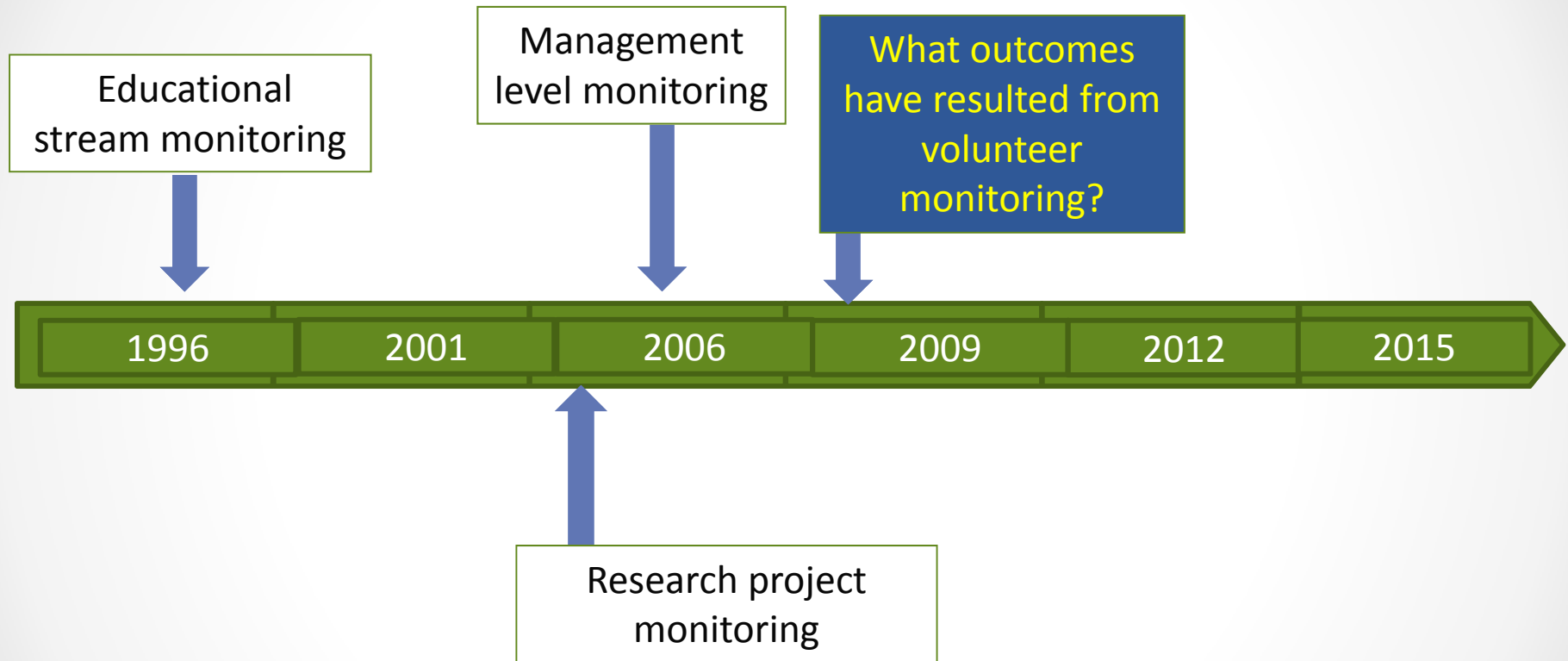
# Does Volunteer Monitoring Make a Difference?

Kris Stepenuck, Ph.D.  
Michigan Clean Water Corps  
Conference  
November 3, 2016

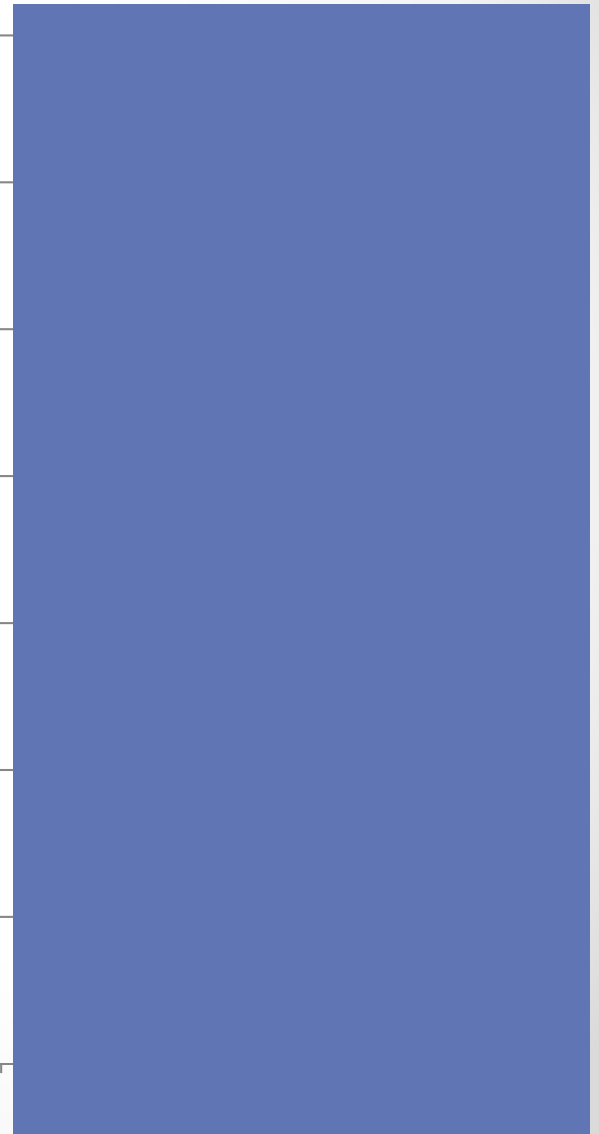
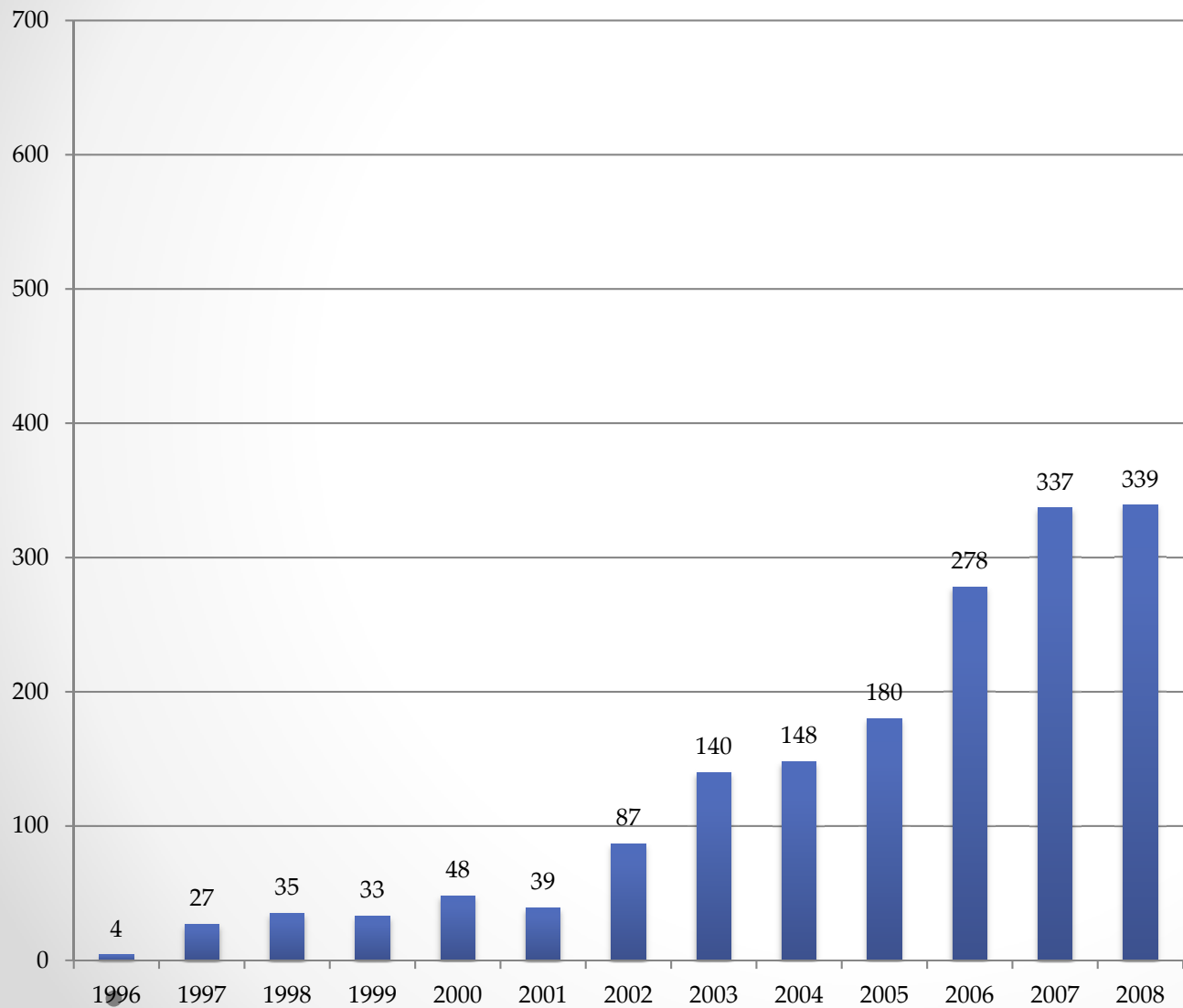




# Water Action Volunteers Stream Monitoring




# STREAM MONITORING STATIONS OVER TIME



# USA Volunteer Water Monitoring Programs

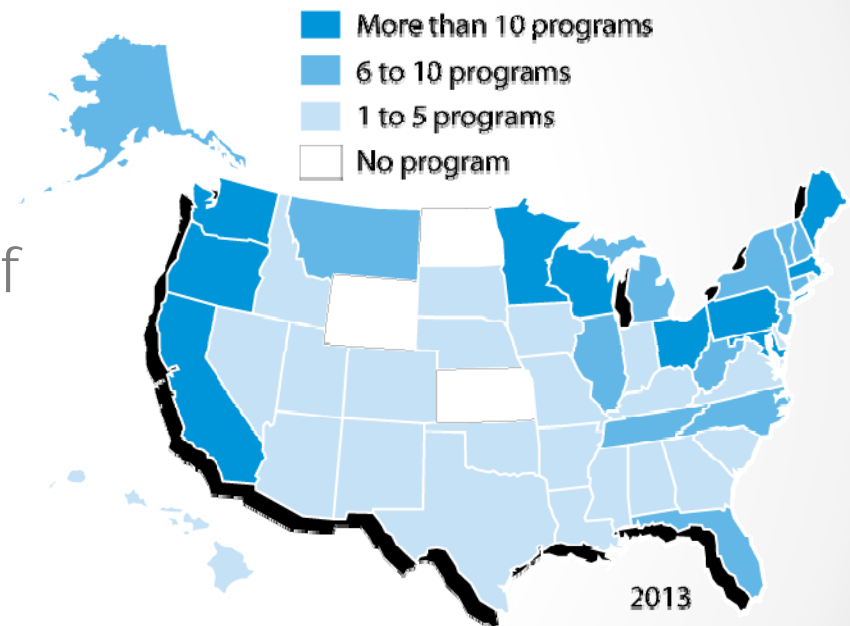




Have volunteer water  
monitoring programs  
impacted natural resource  
management and policy?

# 2013 National Survey

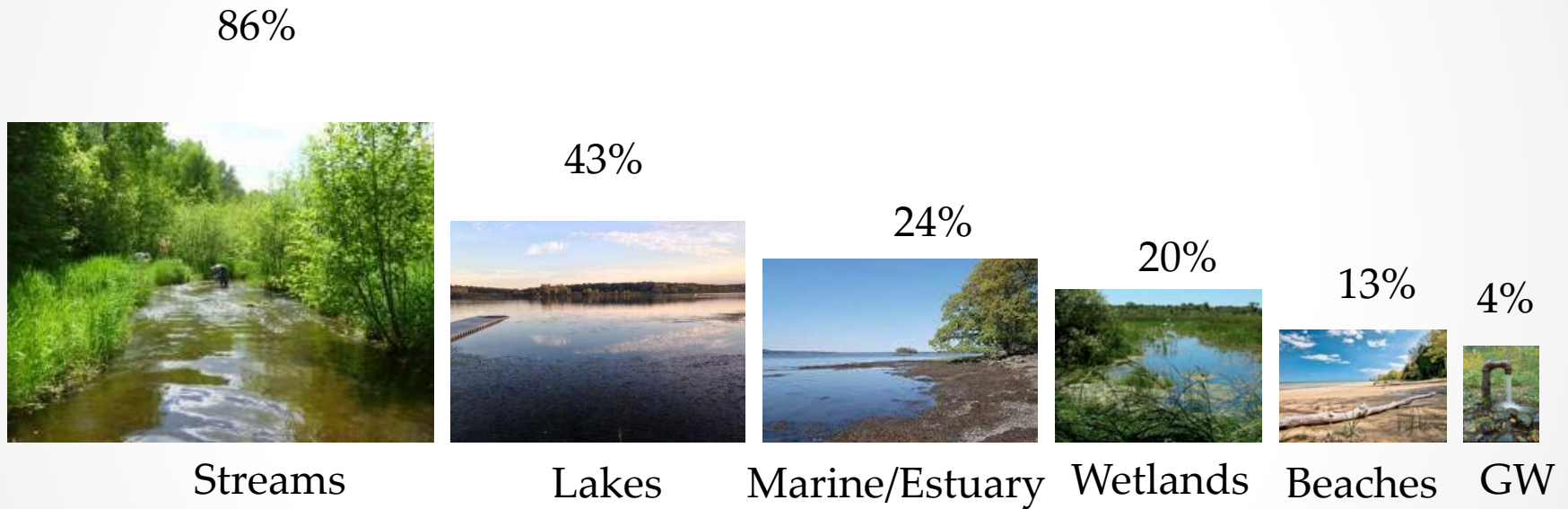
- 345 volunteer water monitoring program coordinators
- Represented population of ~1676 programs in US
- 86% responded
- Formed 1965 - 2012



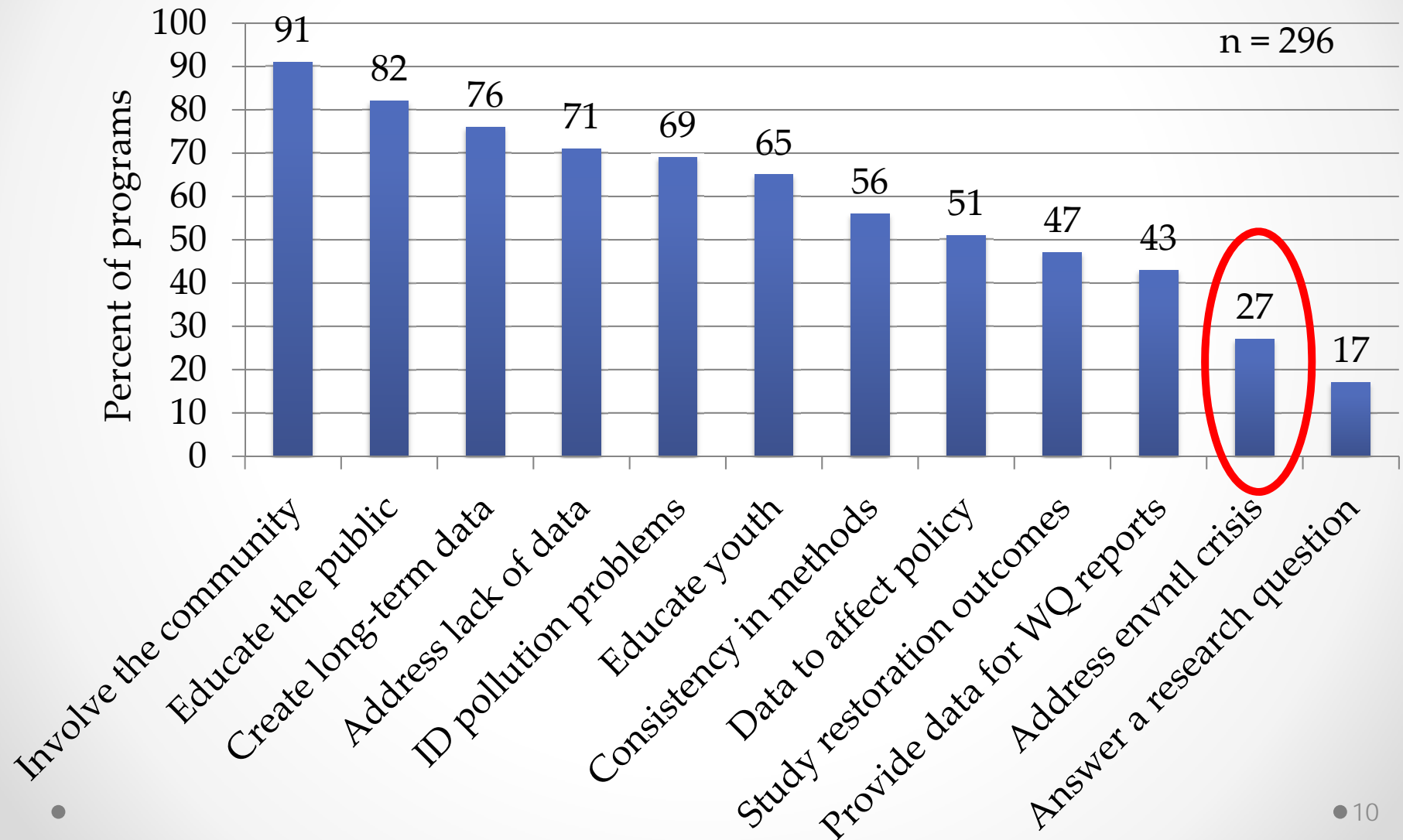


# A Variety of Waterbody Types Are Monitored

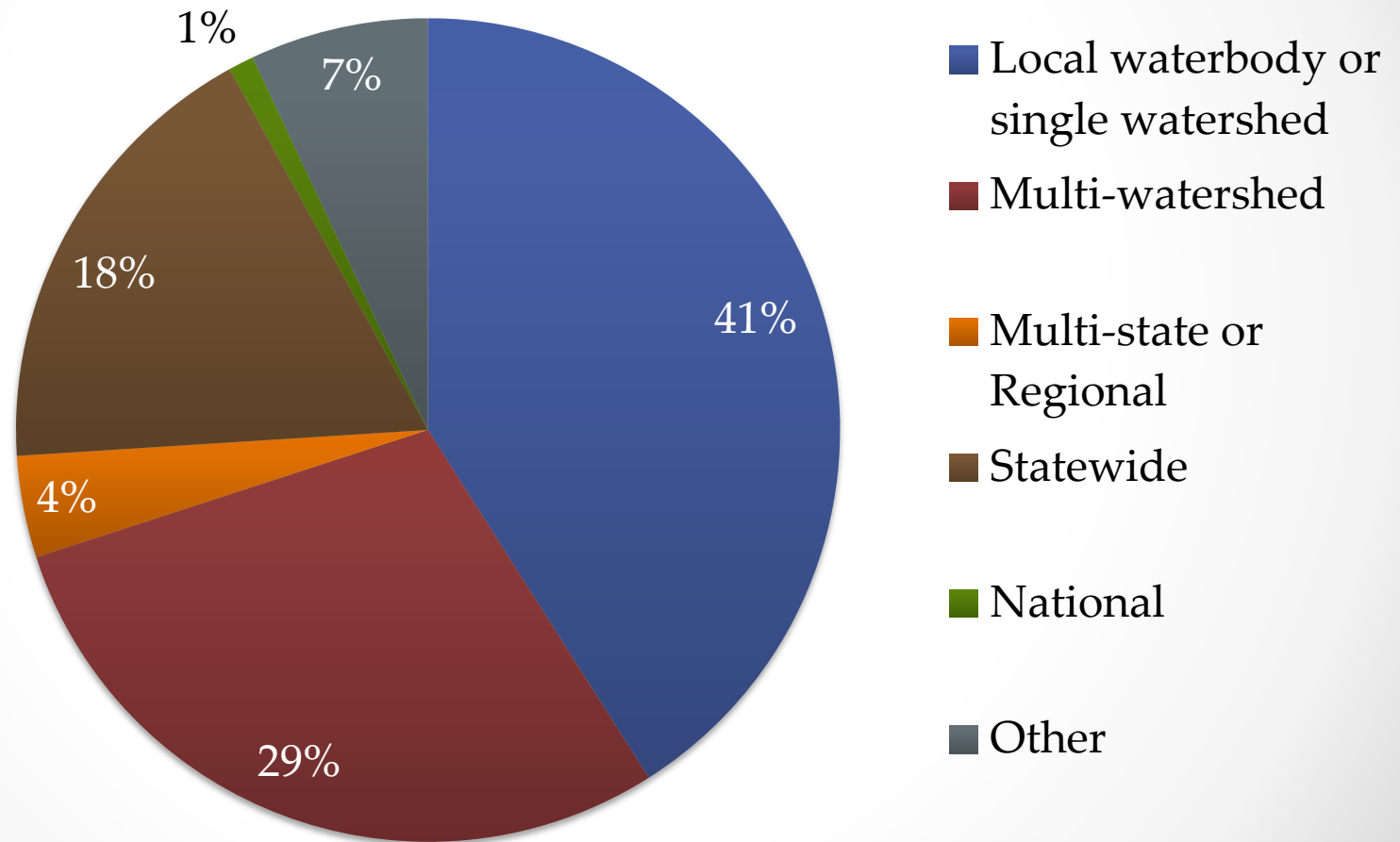
Percent of Programs



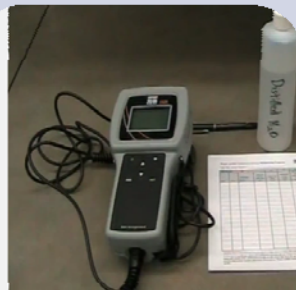
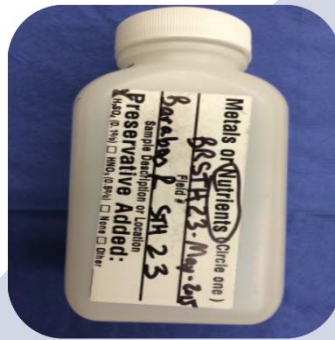
# Program Objectives



# Most Monitoring is Focused Locally



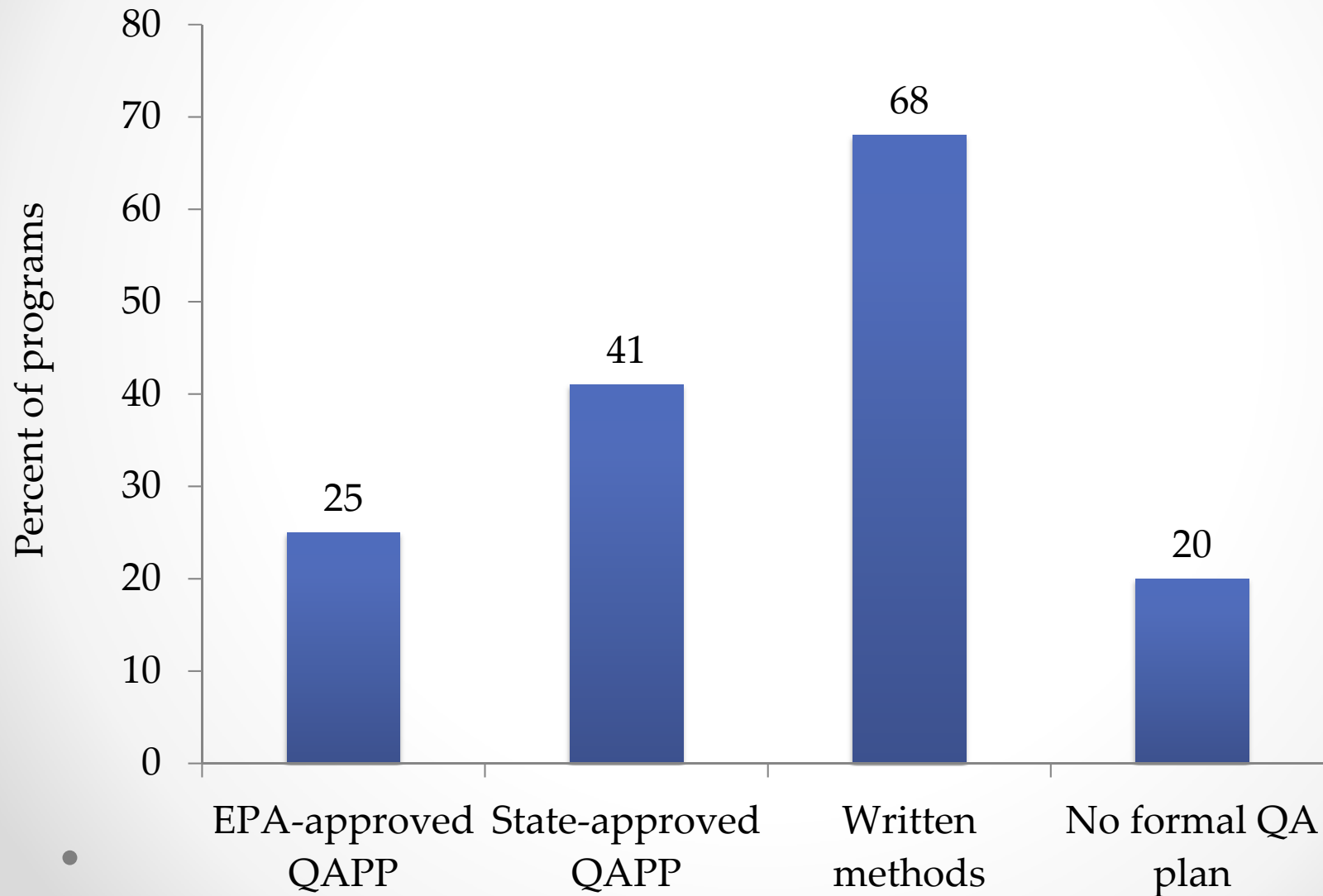
# Programs Implement Many QA/QC Measures



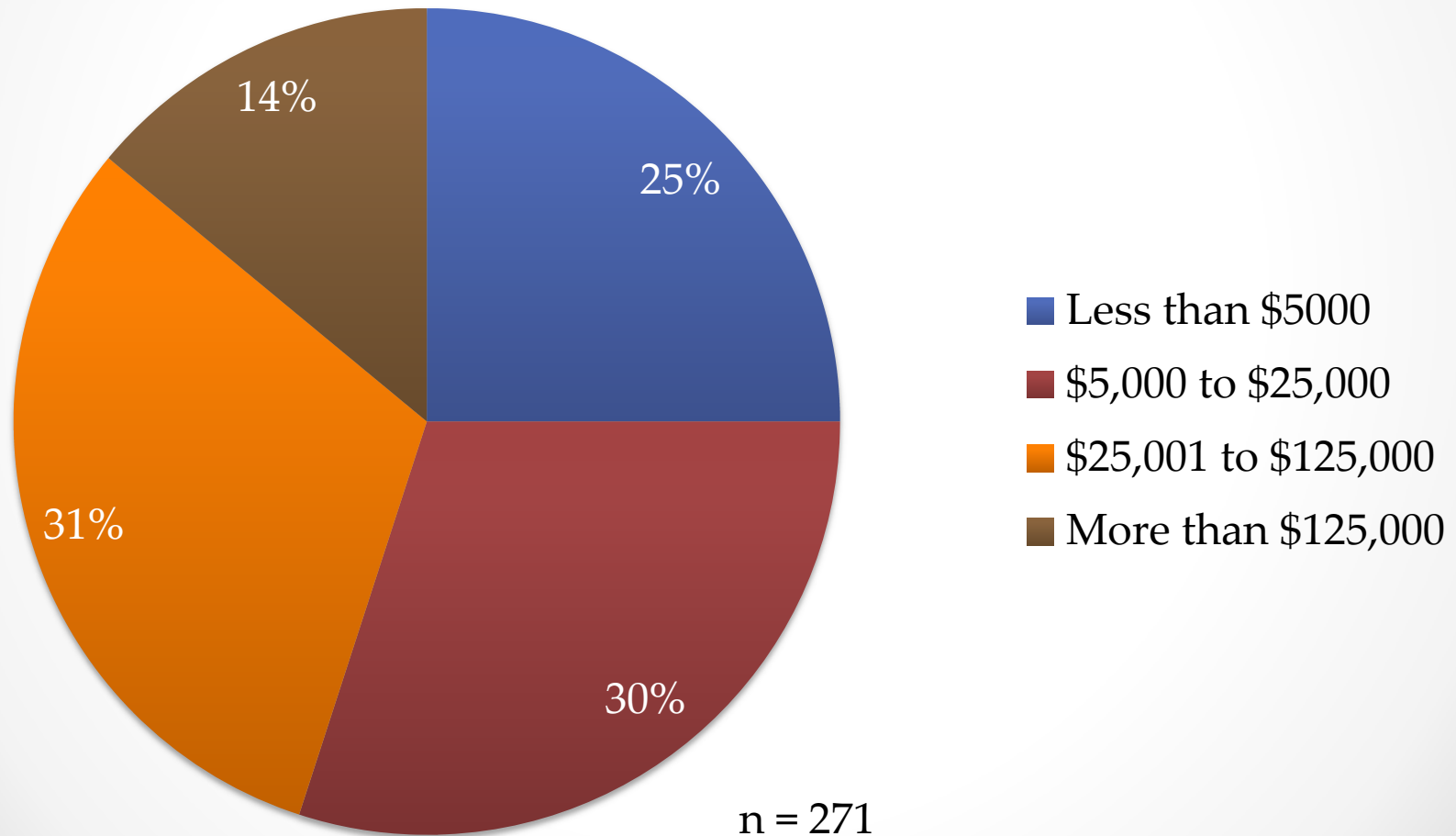
Dissolved Oxygen Meter Calibration



# Programs Have Varying Levels of Formal QA Plans <sup>13</sup>



# Annual Program Budgets Range Widely

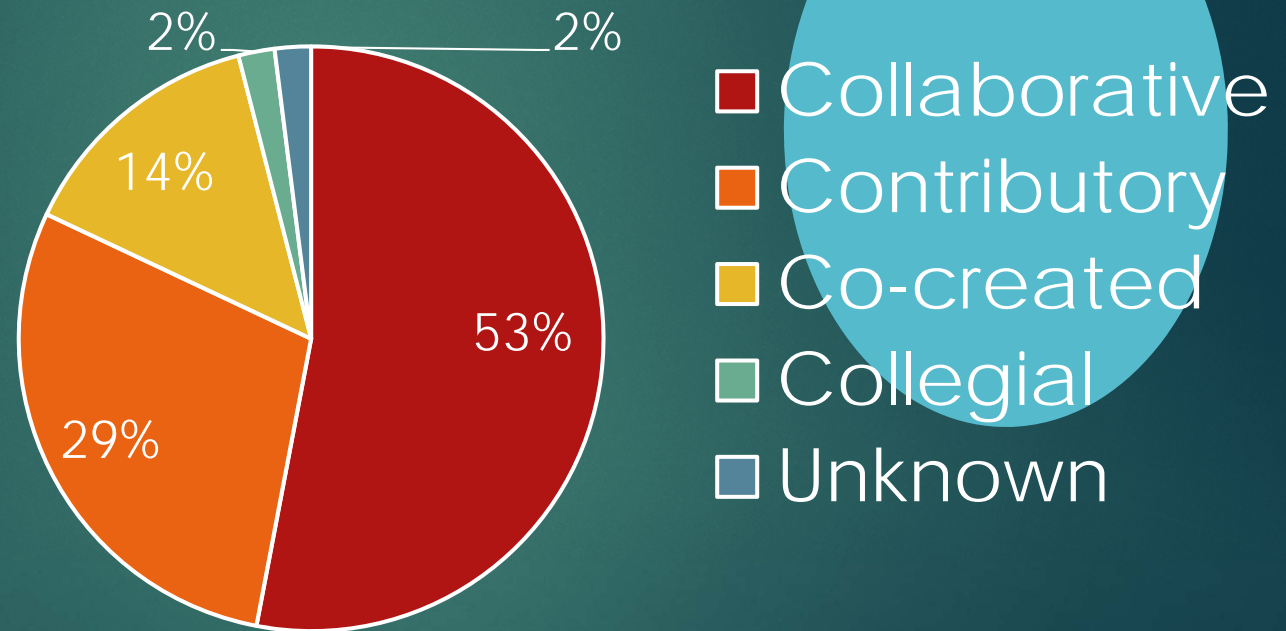


# How Do These Programs Fit the "CCC" Typology?

Program Type		Designed Protocols		Analyzed Data		Communicated Results
Contributory	Volunteer					
	Scientist/Paid Staff	X	and	X	and	X
Collaborative	Volunteer	X	or	X	or	X
	Scientist/Paid Staff	X	and	X	and	X
Co-created	Volunteer	X	and	X	and	X
	Scientist/Paid Staff	X	and	X	and	X
Collegial	Volunteer	X	and	X	and	X
	Scientist/Paid Staff					

Based on categories as defined by Shirk et al. 2012

# Distribution of USA Volunteer Water Monitoring Program Types



Stepenuck and Genskow, in preparation  
Based on categories as defined by Shirk et al. 2012



# Outcomes Achieved Have Direct and Indirect Impacts on Policy and Management

Natural Resource Management Decisions



Volunteer Civic Engagement

Waterbody Restoration & Protection



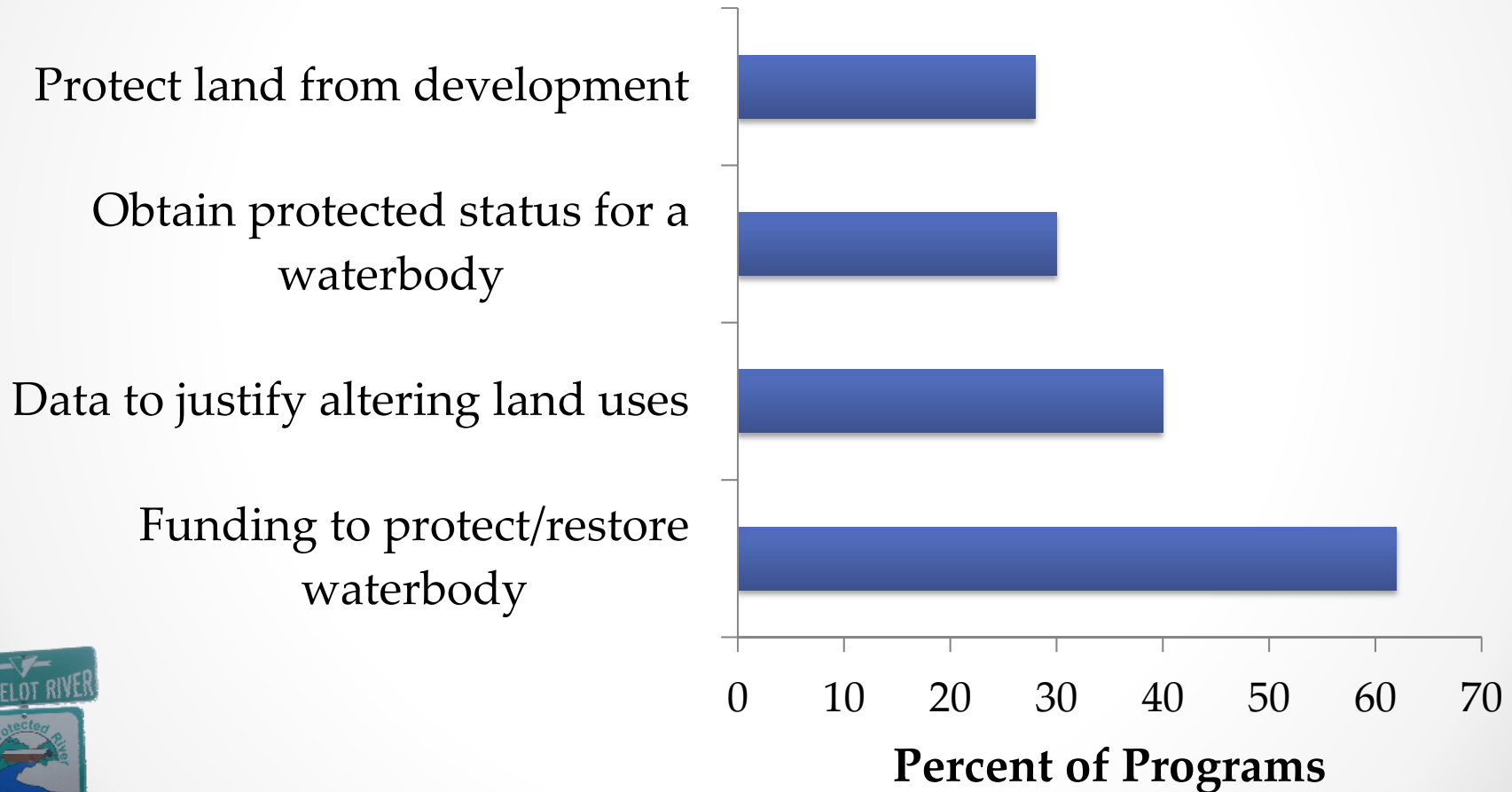
Organizational

# Programs Reported Many<sup>18</sup> Outcomes

- 84 pages of vignettes
- More common:
  - Identified and controlled illicit bacterial discharges
  - Best Management Practices installed
- More unique:
  - National Wild and Scenic River status obtained
  - Presentation to Congress to obtain Superfund site status



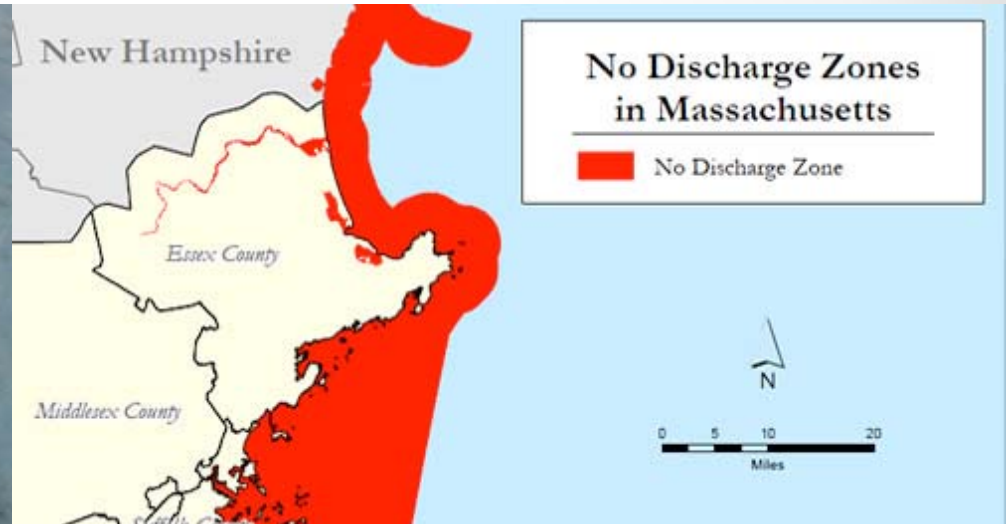
# VM Has Impacted Waterbody Protection and Restoration



# Waterbody Protection



[www.nrcs.usda.gov](http://www.nrcs.usda.gov)



[www.examiner.com](http://www.examiner.com)



# Waterbody Protection



T. Stepenuck and blog.nhstateparks.org



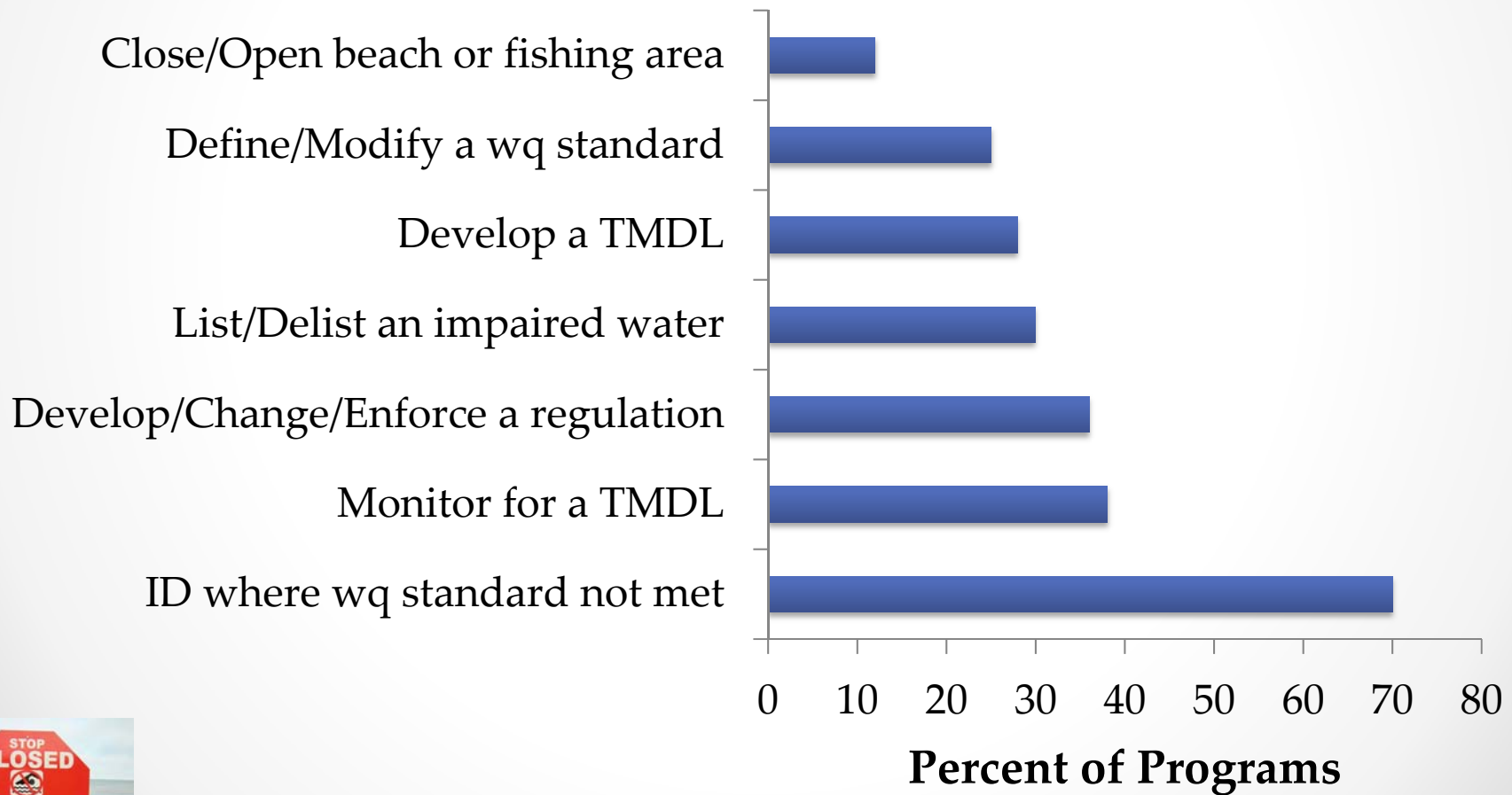
Alabama Water Watch



# Justification to Alter Land Use



# VM Has Impacted Natural Resource Management Decisions

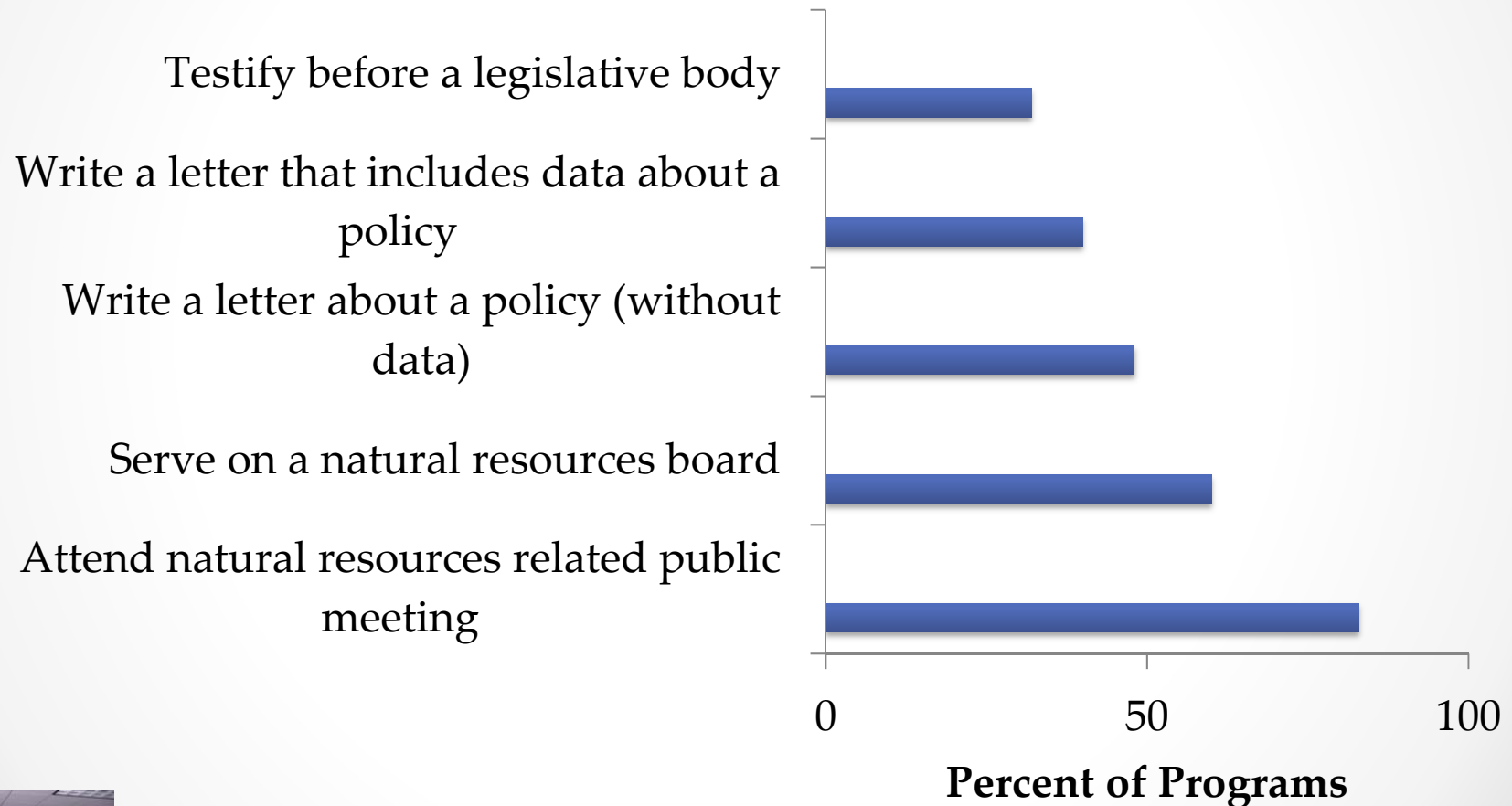


# Develop, Change or Enforce a Policy





# Volunteer Monitors Have Become Civically Engaged



# Volunteers Involved in Natural Resource Decision-making



Healtheducation.org



commons.wikimedia.org

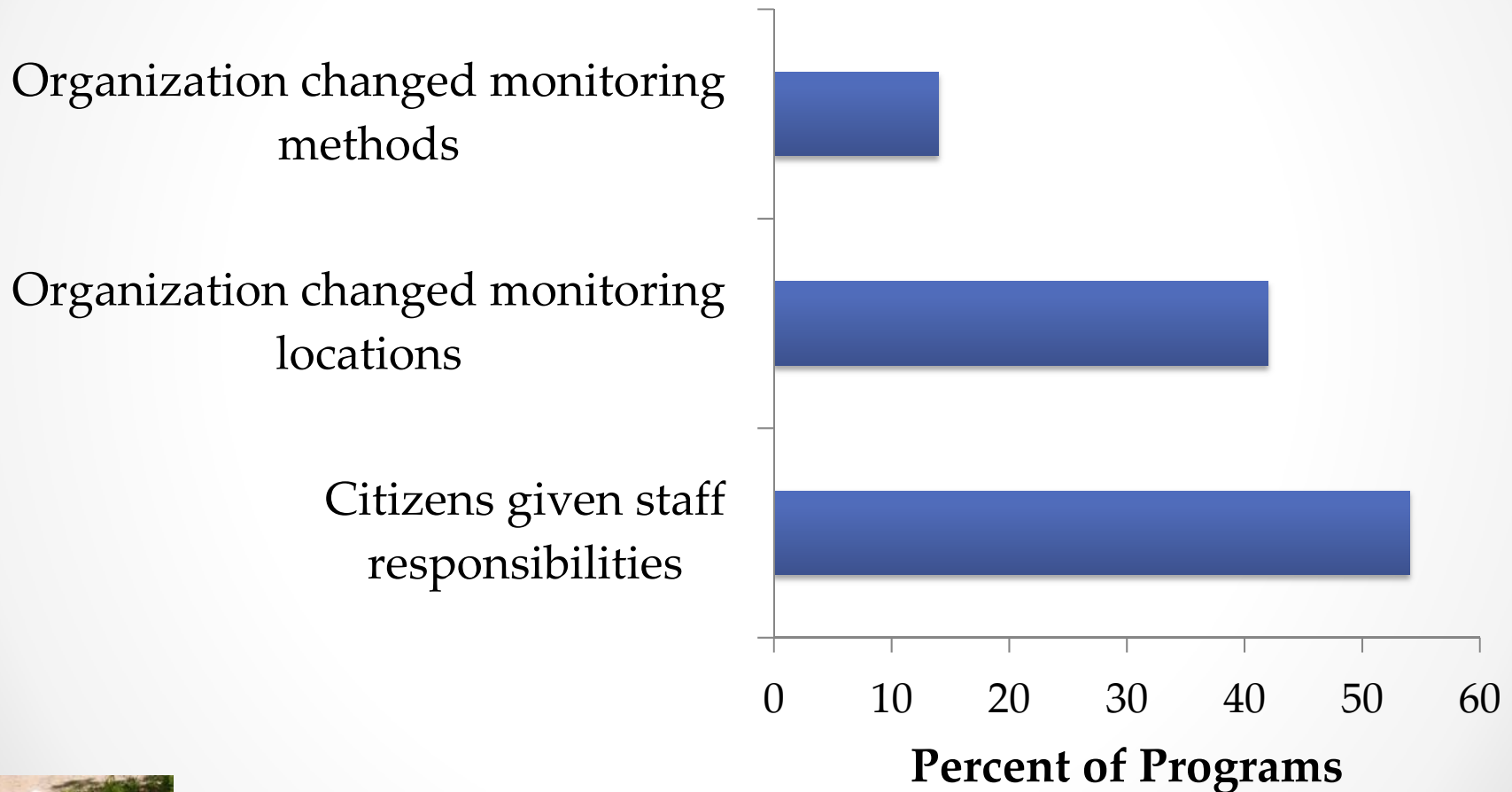


Votespringfield.org



Carolyn Betz

# VM Has Resulted in Changes in Organizational Activities





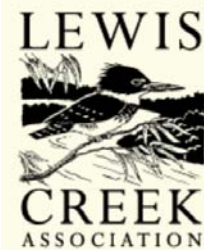
# Organizational Changes



[dec.vermont.gov](http://dec.vermont.gov)



[dec.vermont.gov](http://dec.vermont.gov)



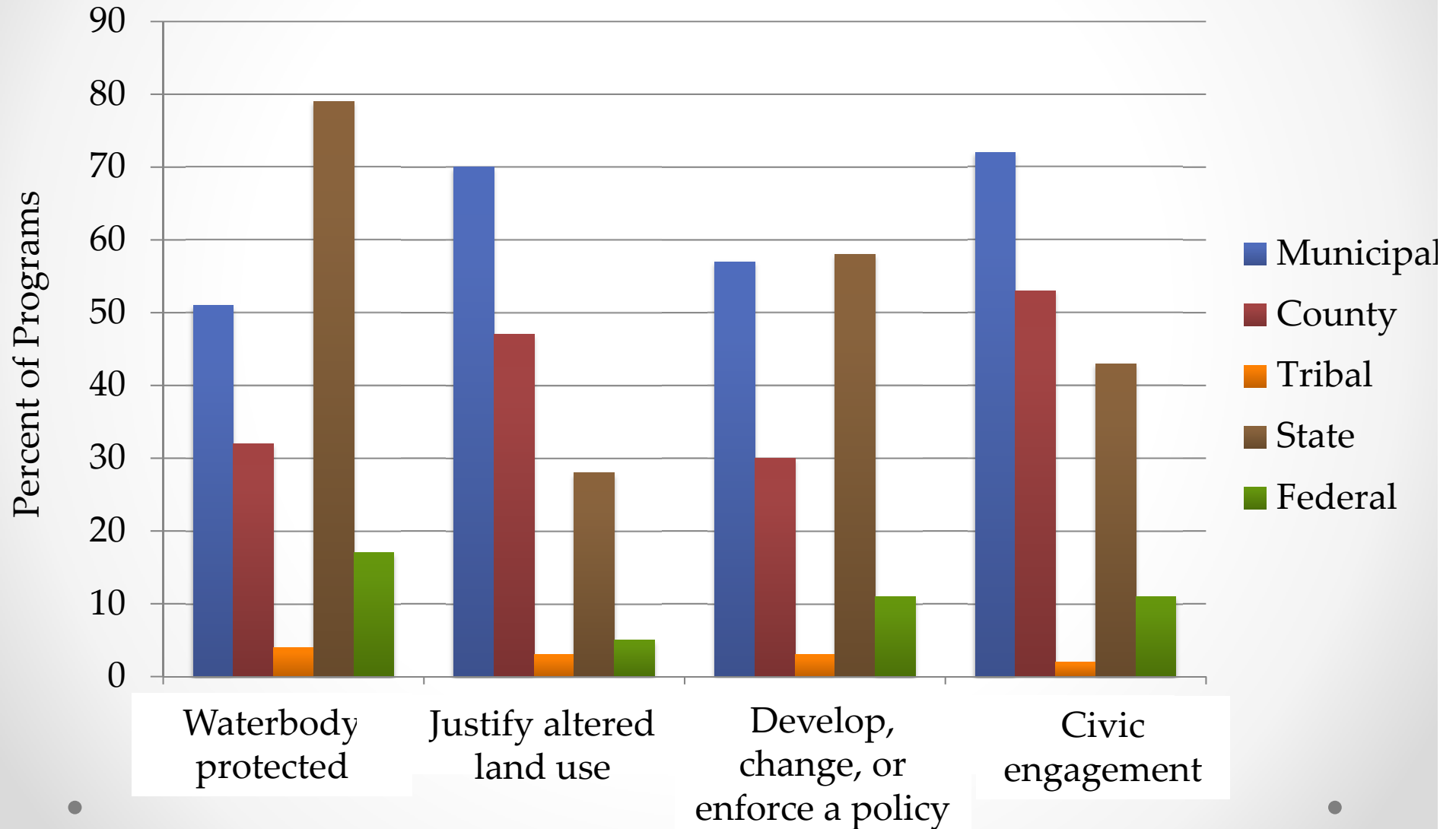
*The Kingfisher Newsletter*

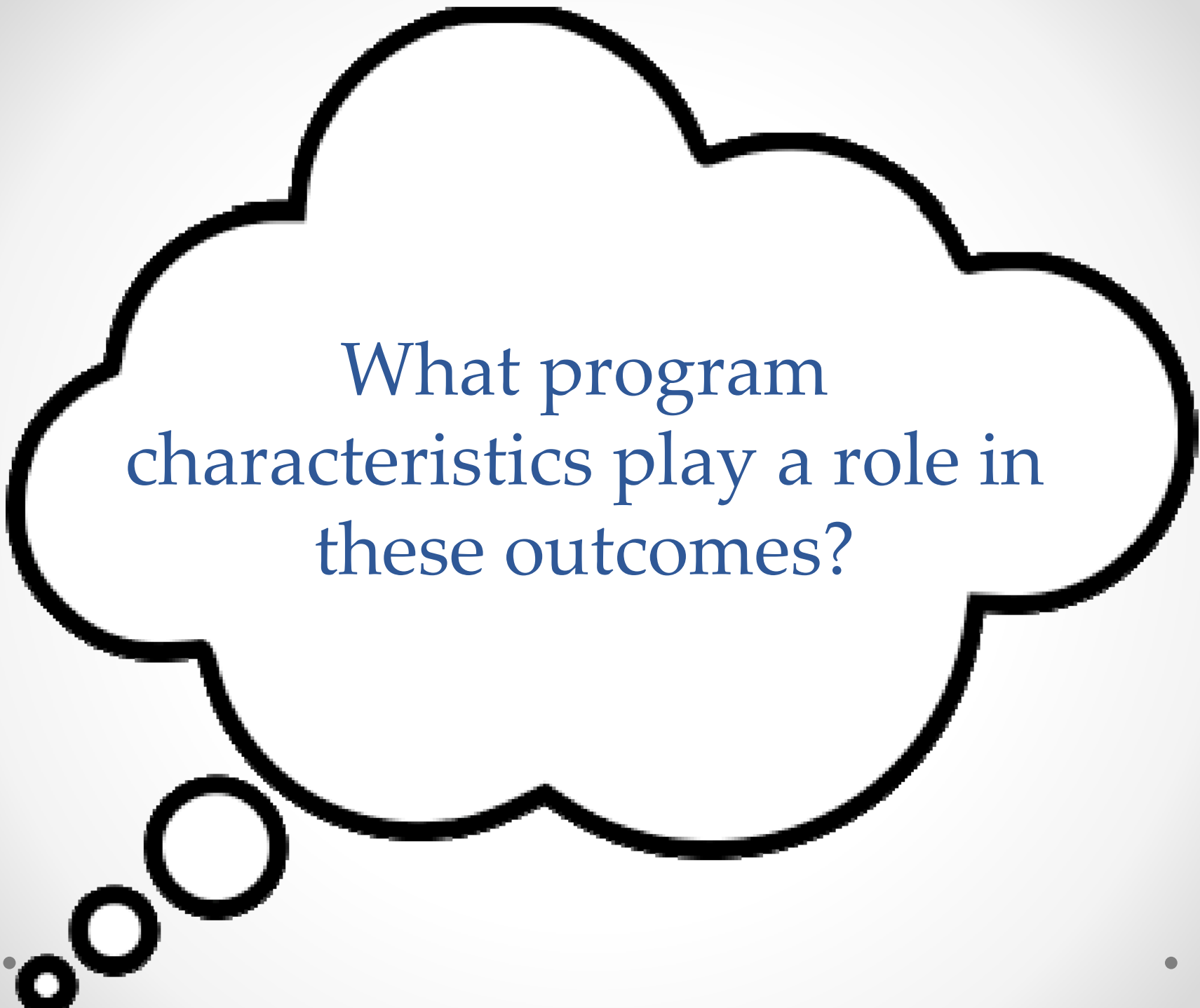
Join us May 24th for "Water Matters, Part II"



Please join us on May 24 at Hinesburg Town Hall @ 7 PM for our next educational event!

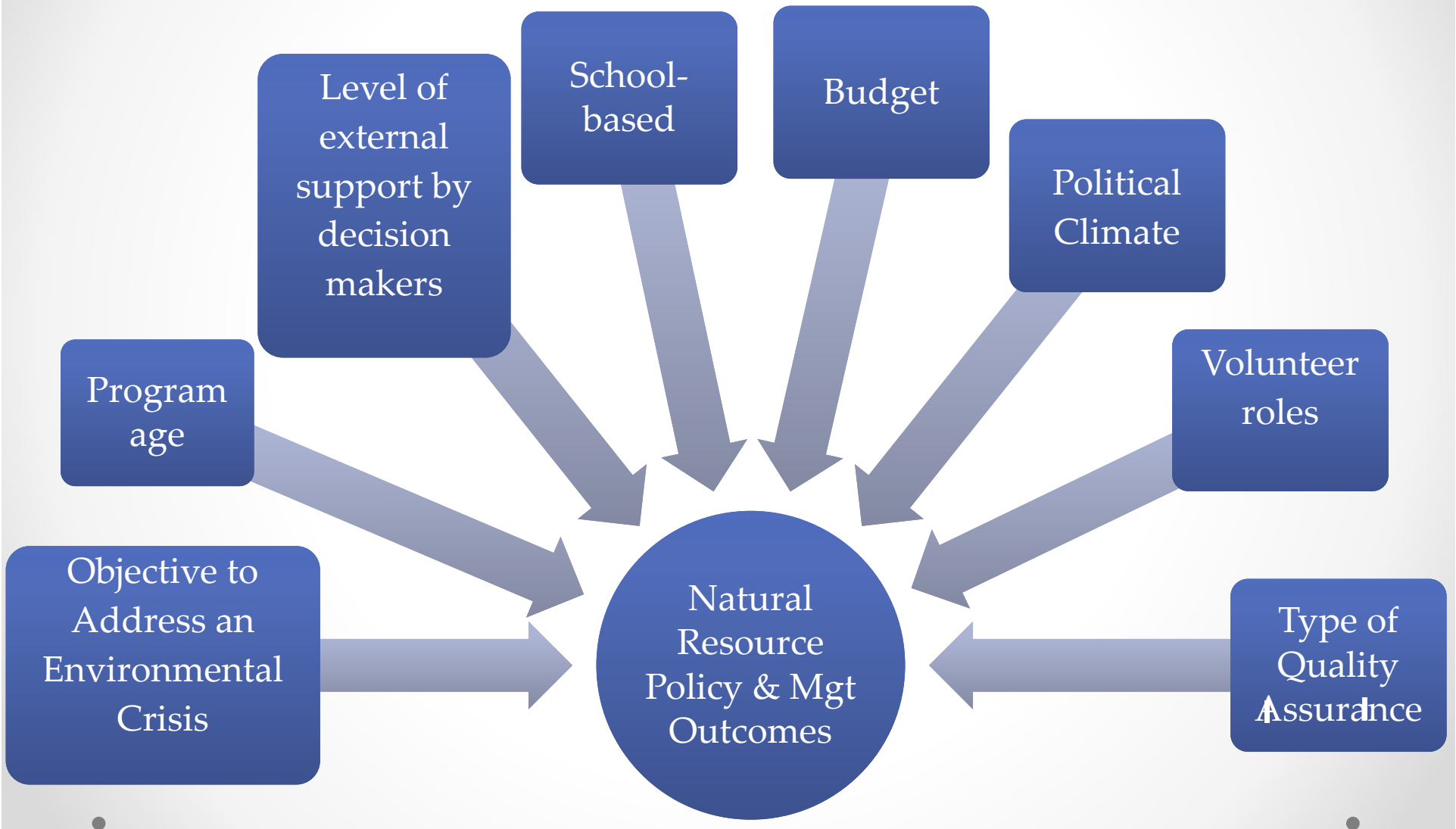
# Outcomes Achieved at Varied Levels of Government






What program  
characteristics play a role in  
these outcomes?

# How Are Program Characteristics Related To Outcomes?



# Program Characteristics That Play Significant Roles

- Objective to address environmental crisis
- Perceived level of support from external decision makers
- EPA or state approved QAPP
- Entirely school-based program 
- Budget
- Volunteer roles (select sites, communicate results, analyze data)

•

•



# Equal Weight Index

Intercept	Significant Independent Variables	t (sig.)	Adj. r <sup>2</sup>	Stdized Partial Regression Coeff.
0.178	2.7 CRISIS	5.10 (0.000)	0.43	0.27
	0.9 EXTSUPPORT	3.04 (0.003)		0.18
	1.8 EPAQAPP	3.21 (0.002)		0.18
	1.4 STATEQAPP	2.71 (0.007)		0.15
	-3.2 STUDENT	-3.66 (0.000)		-0.20
	1.0 BUDGET	3.98 (0.000)		0.23
	0.7 VOLROLES	3.48 (0.001)		0.19

# So What?

- Volunteer monitoring programs are achieving natural resource policy and management successes
  - Volunteer civic engagement
  - Especially at the local and state levels
  - Identification of when and where standards are being met
- Programs that coalesce and focus on addressing a crisis have more successes
- There is a distinction between educationally-focused school efforts and other volunteer monitoring efforts
- Having an EPA or state-approved QAPP is important
- Budget often matters

•



**Thank you,  
for your time  
and your  
commitment!**



Questions?

Kris Stepenuck  
Lake Champlain Sea Grant  
University of Vermont  
[kris.stepenuck@uvm.edu](mailto:kris.stepenuck@uvm.edu)  
802-656-8504