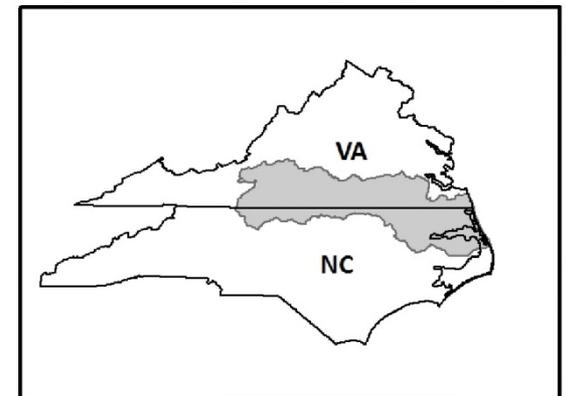


State and federal collaboration as part of the Albemarle Sound demonstration study for the National Monitoring Network

Michelle Moorman, USGS and Dianne Reid, NCDWR



Implementation of the Albemarle Sound demonstration project

Obj. 1: Assess current monitoring programs

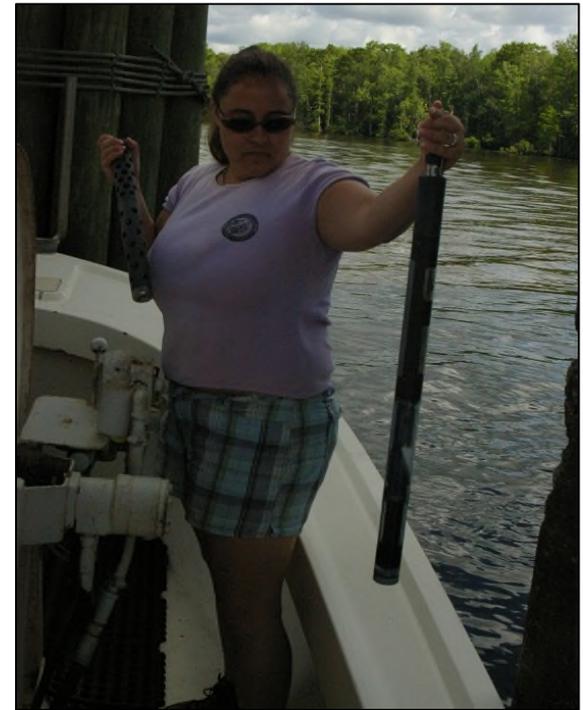
- Inventory current monitoring programs in the Region
- Conduct a gap analysis to determine current monitoring needs
- Publish Albemarle Region monitoring database and report

Obj. 2: Implement monitoring to address data gaps

- Conduct a regional water-quality synoptic
- Implement a pilot monitoring program to address nutrient and phytoplankton data gaps
- Synthesize available data to report on water quality in the Albemarle Sound and provide guidance for further research and monitoring

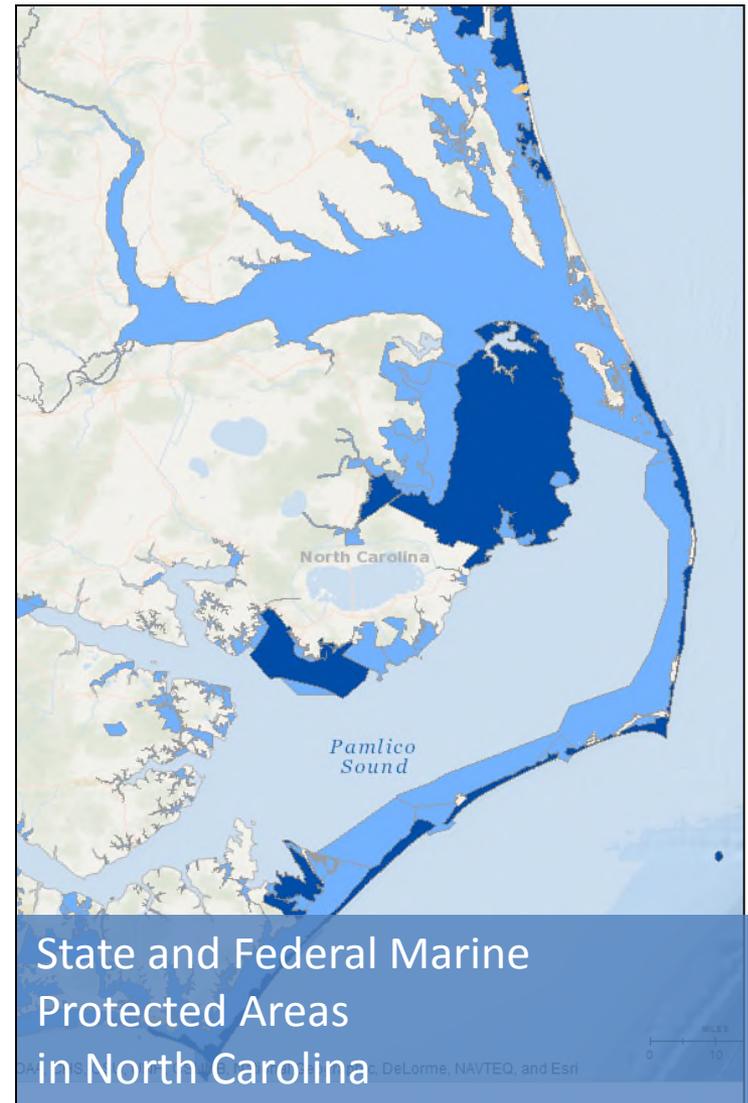
Partner collaboration is key to the National Monitoring Network

- Identify specific management issues that research and monitoring could address
- Document current monitoring programs including
 - Location of monitoring sites
 - Agency contacts
 - Type of data collected
 - Links to on-line holdings
 - Metadata
- Collaborate on monitoring and research



Resiliency of the Albemarle is important

- Maintenance of important species and ecosystems
 - Sustainable fishery
 - Supporting recreational and commercial uses
 - Healthy SAV communities
 - Maintaining water quality
- Resilience to impacts of climate change
 - Sea-level rise
 - Extreme climatic events
 - Shoreline migration
 - Changing salinity concentrations
 - Loss of habitat



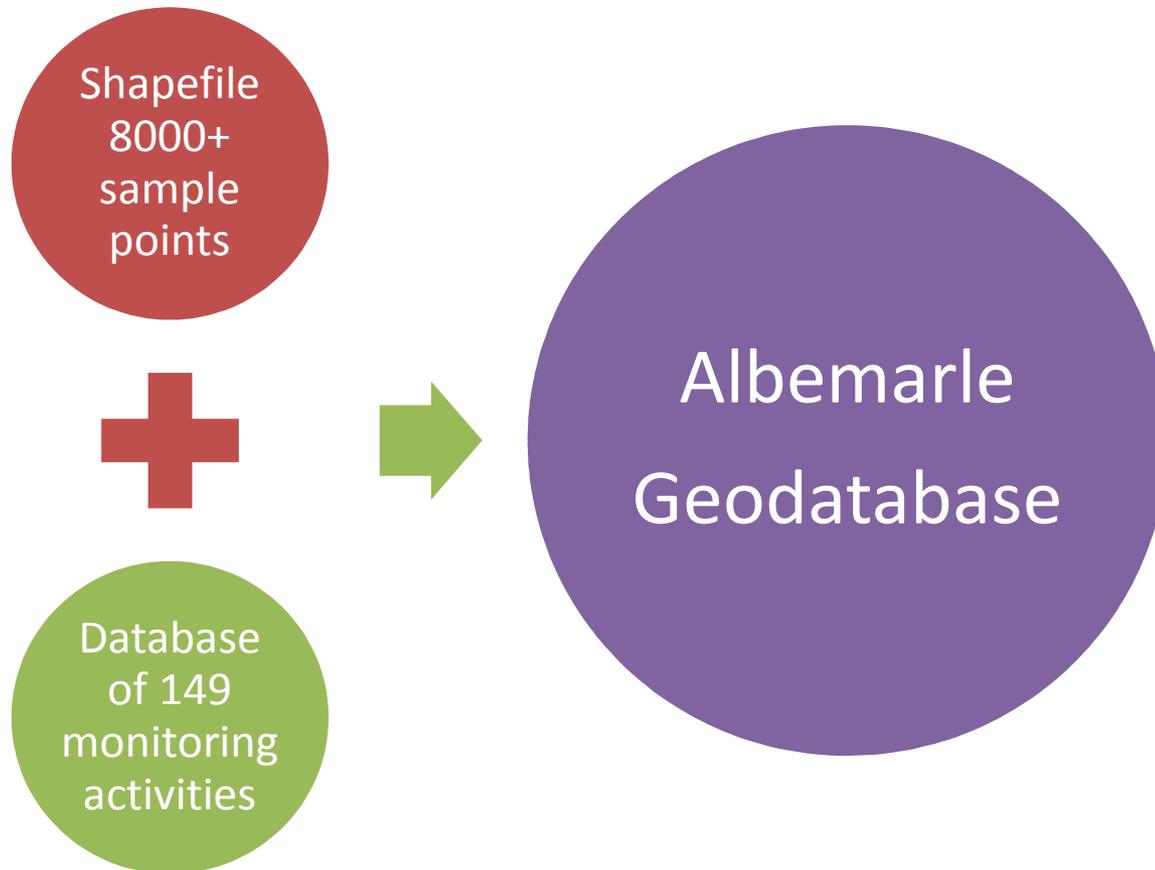
Potential data gaps the demonstration project will address

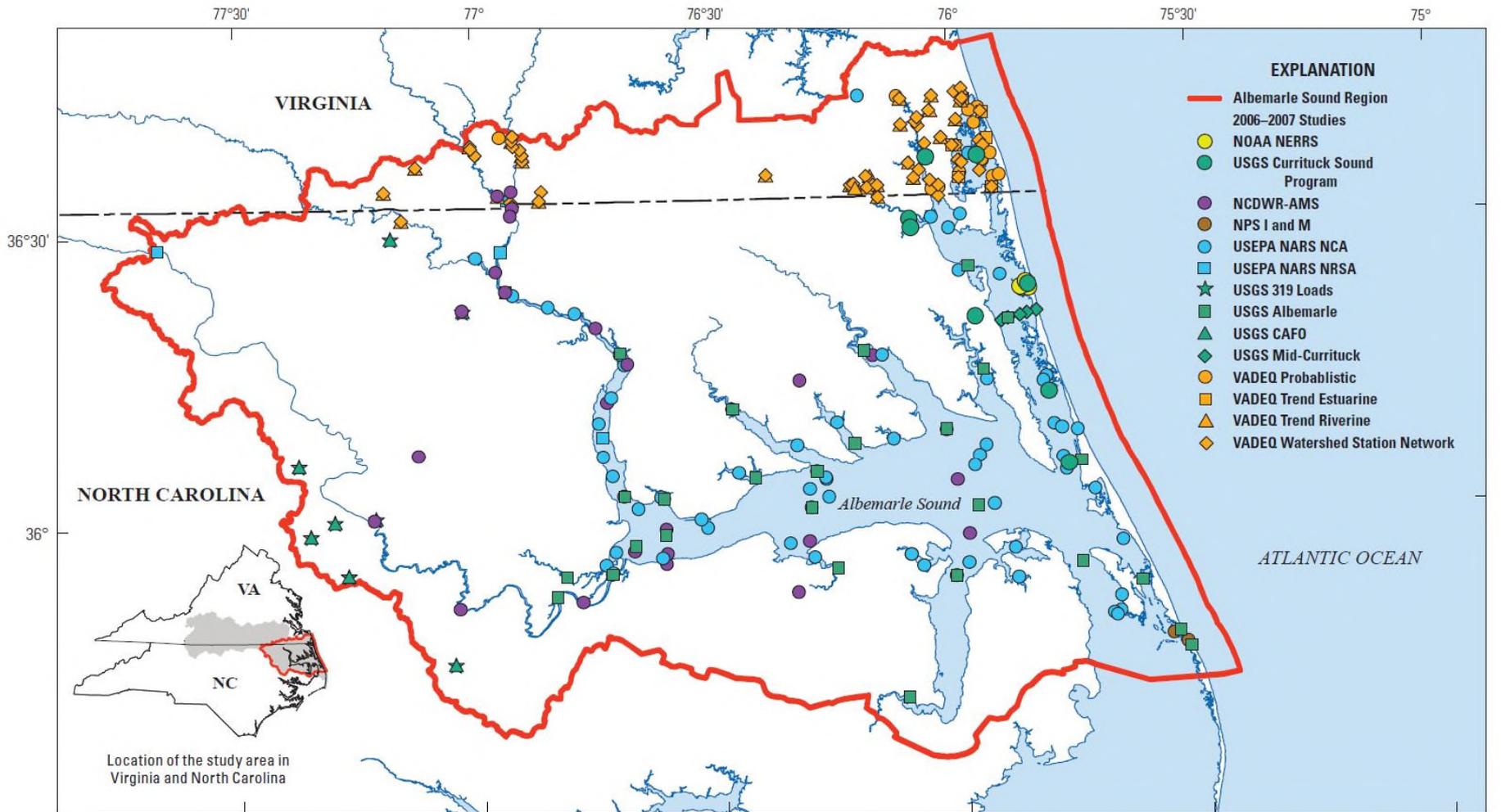


- Provide a synthesis of all current monitoring efforts in the region
- Evaluate spatial variation in water and sediment-quality in the Albemarle Sound from data collected in 2012
- Evaluate trophic status of the Sound during 2012-2014
- Improve understanding of temporal and spatial trends in water quality

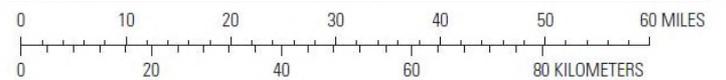
Documenting Current Monitoring Programs

- Worked in partnership with Albemarle-Pamlico National Estuary Program
- Compiled information into a geospatial database that could be queried
- Database includes 19 organizations documenting 62 current monitoring, 18 current research, and 26 recently discontinued projects.





Base map data from The National Map
 State Boundaries from the 1:100,000 scale TIGER/Line dataset, U.S. Census Bureau

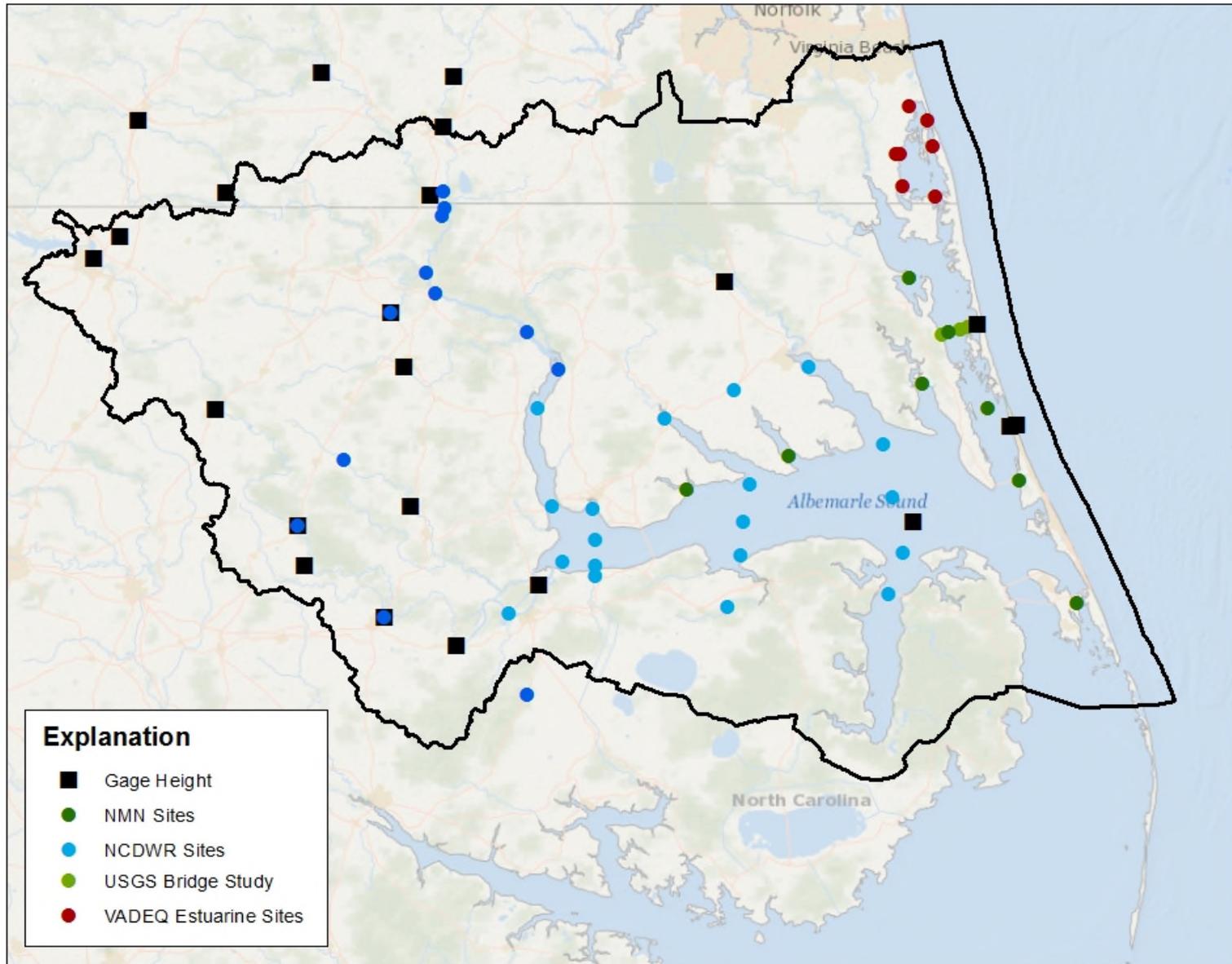


Partnerships used to facilitate monitoring

- **Objective:** Improve understanding of water quality in Albemarle Sound with a specific emphasis on eutrophication and harmful algal blooms
- Sampling made possible through many in-kind contributions from:
 - **Albemarle-Pamlico National Estuary Partnership:** Facilitated partnerships
 - **NC Division of Water Resources:** Provided boats and drivers and phytoplankton analysis
 - **NC Division of Marine Fisheries:** Provided boats and drivers
 - **UNC Coastal Studies Institute:** Provided facilities, equipment and expertise
 - **US Fish and Wildlife Service:** Provided boats and drivers



2013 Sampling Design compliments other sampling networks for nutrients



USGS and NCDWR data being compared to facilitate merger of the datasets

Organization	Date	Time	Depth	TKN	NH4	NO2+NO3	TP	Chl a
USGS	Jul 18 2012	1200	1.6	.67	<.010	<.040	.038	10.2
DWQ	Jul 18 2012	11:50	1.6	0.62	<0.02	<0.02	0.04	
USGS	Jul 17 2012	1330	2.7	.50	<.010	<.040	.031	3.9
DWQ	Jul 17 2012	13:13	2.5	0.54	<0.02	<0.02	0.02	
USGS	Jul 17 2012	1300	1.9	.48	<.010	<.040	.023	5.6
DWQ	Jul 17 2012	12:35	2.4	0.57	<0.02	<0.02	0.02	14
USGS	Jul 17 2012	1200	1.6	.51	<.010	<.040	.022	6.1
DWQ	Jul 17 2012	11:35	2.4	0.52	<0.02	<0.02	0.02	17
USGS	Jul 19 2012	1030	2.6	.59	.011	<.040	.027	8.8
DWQ	Jul 19 2012	10:30	2	0.59	<0.02	<0.02	0.02	13

NMN can improve monitoring at the regional level

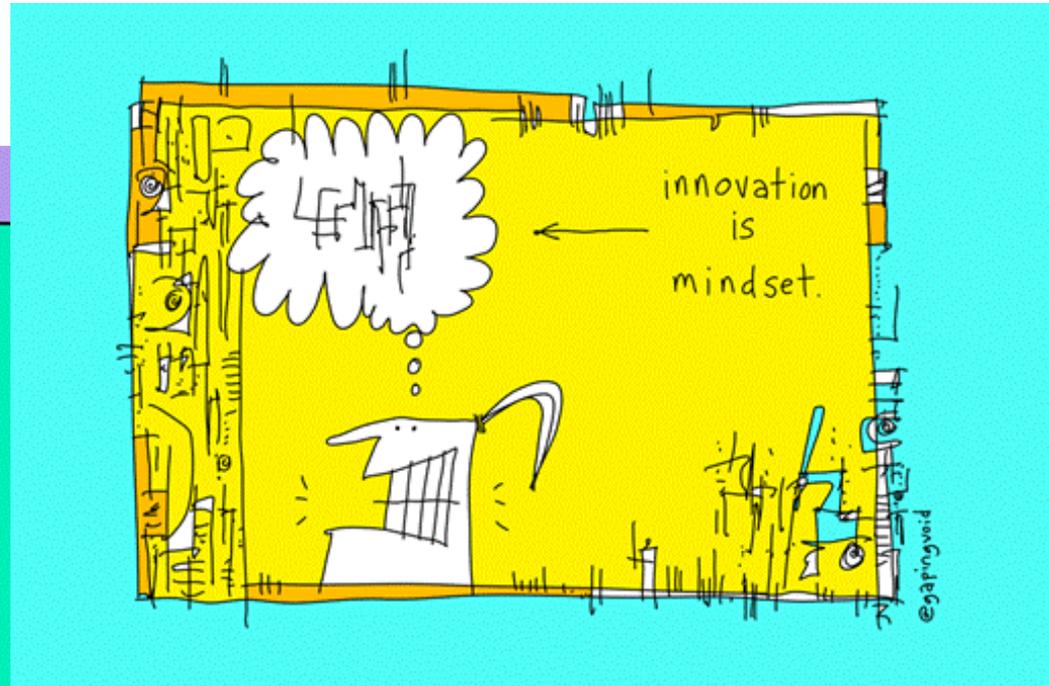
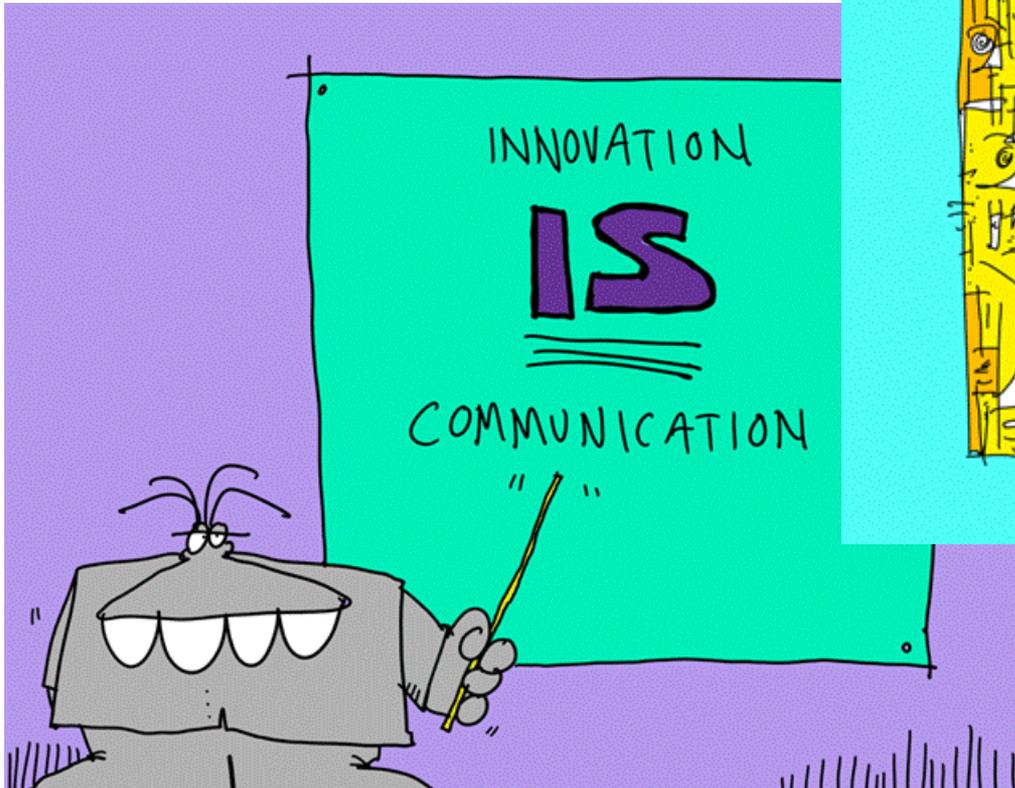


- Documenting current and historical monitoring and research efforts in the Sound and identifying monitoring gaps
- Summarizing monitoring data from multiple sources
- Facilitating partnerships to improve the monitoring network in the Sound

State Perspective - Broader View

- **Flexibility**
 - Regulatory vs non-regulatory
 - Methodologies
- **Wise use of resources**
 - General Assessment
 - Realigning Ambient Monitoring
 - Nutrient Criteria Development





Gapingvoid Cartoons by Hugh MacLeod