

# 2015 STAC Retreat

September 9, 2015

# Outline for today...

- Feedback from you
- Quick synthesis of what we heard yesterday
- Results of STAC effectiveness survey
- Breakout groups: strategic use of STAC resources

Any feedback/reflections?

# Panel feedback

- STAC serves as voice of independent scientific review, information
- We have a set of tools: are we using them effectively?
  - Workshops, issue papers, synthesis papers, independent reviews, peer reviews
  - Need to communicate outcomes, work with others (e.g., management board, GITs)
  - Yet how do we work with others and not step over boundaries (e.g., into decision making)?
- Need to address not just WQ goals, but also other goals
- Need to be mindful of “operations” – functional systems architecture across scientific community important
  - GIT focus on developing goals, work plans = lots of meetings, demands
  - STAC requests seen as one more demand?
  - Need for systematic, unified coordination of scientific resources, esp. when there are insufficient funds to meet identified needs
- Helpful to have more clarity on STAC going forward
  - What is STAC?
  - How can STAC better coordinate with others esp. given unique point of contact?

# Projects/expertise in the room

- Adaptive management:
  - Processes
  - Indicators framework: outputs/outcomes
  - Coordination @ local scale
  - Capacity of households
- Climate related
  - Climate extremes on N cycles
  - Nutrient transport
  - Climate resiliency: adaptation, design
  - Rapid response to climate change– e.g., agriculture
- Modeling
  - Process based modeling re: stormwater/ag → decision support tools
  - System modeling: habitat loss, etc.
  - Model calibration
  - Benefit/cost modeling of TMDL
  - River empiricist: statistical analysis, long term water quality data
- Specific projects/needs
  - Science learning outcomes
  - Nature based shoreline features
  - P filters
  - Geomorphology & hydrologic evaluation of green infrastructure
  - Carbon cycling in coastal areas
  - Ecological functions of oysters
  - Park designs to address community & stormwater runoff needs
  - Cost effectiveness of BMPs for MS4s
  - Incentives for BMPs- e.g., cover crops
  - Policy design for non-point source runoff
  - Multi disciplinary work across watershed

# Issues that keep people awake at night

- Big picture questions:
  - What does it mean to “restore” Chesapeake Bay? What are we trying to achieve?
  - Are our goals still appropriate/relevant to the system?
  - How do we keep science relevant?
    - Is there too much a focus on research funding versus ensuring the relevance of science?
    - How can we translate how the system works to the average person in order to make relevant, help effect change, support funding
- Nutrient issues
  - Aggregate input of P & N, change in ratio
  - Rethinking nutrients: technology, markets, incentives
  - Finding ways to capitalize on nutrient availability: need, demand
  - Large scale nutrient management, nutrient imbalance (importation of nutrients into Chesapeake Bay)
  - Technological innovations: e.g., something more than Haber Bosch process to create fertilizer?
  - Carbon loads (N, P, C ratios)
  - Prediction, prioritization of nutrient hot spots → more effective resource allocation?
  - Targeting = bad word
- BMPs
  - Dynamic equilibrium of Lower Susquehanna River; daily effects vs. high flow scour effects
  - Effectiveness?

# Issues that keep people awake at night

- Management at different “scales”, focal areas
  - Landscape scale: e.g., ditch management
  - Temporal: landscape management over time: e.g., volumes/movement of water across landscape
  - Focus on restoration vs. protection, preservation
  - Disconnect b/n \$ spent: bang for the buck vs. benefit received
    - Lot of \$ spent on wastewater treatment, but nutrient management needs higher in ag
  - Chesapeake Bay Program focus on water quality; how can broader issues be addressed?
  - Nexus of food, energy, water nexus → “sustainability”? Ecosystem sustainability?
- Addressing uncertainty, risks
  - Changing management: e.g., increasing chicken houses
  - Population increases
  - Land use changes
  - Climate change: range of effects, moving targets, changing scenarios, political changes, impact on ecosystem services, political changes, possibility that a major issue like sea level rise will trump other considerations
  - Uncertainty about analyses, modeling
  - What is possible given the changes? How can restoration, funding be targeted given uncertainty?
- Adaptive management
  - How is this applied to the Chesapeake Bay?
  - How can we better address linkages?
  - What can we learn from performance assessments: are they appropriate, what can we learn, will we incorporate information?
  - Effective timely feedback critical– need to rethink monitoring, citizen science (and framing of monitoring– sounds boring)

# Issues that keep people awake at night

- Living resources
  - Impact of multiple environmental effects, stressors
  - Impact of “restoring” species, but effort lost due to climate change
  - Future risks/trends
  - Integration across scales; integration into bay system, holistic thinking
  - Need to expand thinking beyond single resource into broader scale, more connected systems
- Emerging issues
  - Microplastics: impact on ecosystem, economic development vs. envt'l impact
  - Carbon loading & role of tidal wetlands
- Promoting innovation
  - Develop incentives, motivations to incentivize change
  - Align policy directions, frameworks for decision making
  - Promote creativity
- Framing of issues
  - “win-win” = oversold
  - How do we confront, address polarizing issues?

# Issues that keep people awake at night

- Addressing the human dimension
  - 4 key species should include people
  - Impact of population growth, land use changes → uncertainty, risk
  - Economic disparities critical to examine
  - Human system = complex; need to model human With different sectors: Agriculture/farmers; industry; students
  - Between groups:
    - siloed/disconnected at local levels
    - Translation of research to locally relevant science, education, innovation
  - In an integrated fashion: between disciplines
- Funding
  - Funding constraints
  - Need to find ways to address pollution control through markets, private sector
  - Need to convey importance of effort to help provide support for investments, funding
- Mid-point assessment
  - Accountability, but at what cost?
  - Discussion about technology, but also points to need for much more difficult conversations

# Key issues identified in break out sessions...

## 1. Adaptive management needs to be fully embedded

- Lay groundwork, reinforce w/ GITs, Management Board

## 2. Climate change = critical issue

- System interactions need to be integrated; cascading effects considered
- Consider identifying “canaries in the coal mine” (indicator species)
- Need simple, adjustable models that can be easily run, build on long term monitoring data
- Need to be able to communicate risk, uncertainty, impacts

## 3. Nutrient approaches

- Workshop to address how system is changing, resulting science needs
- Example changes: tile drains, irrigation, mass balances, change in fertilizer targeting (e.g., soluble P)

## 4. Human dimensions & living resources

- Critical overarching issues (broader than just water quality) – helpful to look @ linkages
- Need to incorporate more fully into understanding, system analysis
- Potential action steps: network analysis; integration with GITs; ecosystem modeling workgroup

# Assumptions going forward?

- STAC has an important role to play
  - By helping coordinate independent scientific review
  - By helping to identify gaps, upcoming issues
- STAC can and should be leveraging its position, networks:
  - Broad coalition of expertise included as STAC members
  - STAC members networked to other individuals, institutions
  - Institutional access to Chesapeake Bay Program; CBP Management Board
- STAC has several potential audiences:
  - Chesapeake Bay Program
  - Goal Implementation Teams
  - State & county
  - Other?
- STAC has limited resources (time, funding, personnel, attention), but more resources than other aspects of CBP efforts (STAR, GITs)
  - Need to prioritize, focus to ensure effectiveness
  - Need to partner, coordinate to meet needs, ensure relevance

# Effectiveness Survey- Lisa