IDENTIFIED DATA AND MONITORING NEEDS OF THE CHESAPEAKE BAY PROGRAM PARTNERSHIP

Outline

- GIT Survey Answers
- STAR Response
- Next Steps
- Discussion

Current Data:
Sustainable Fisheries

- Blue Crab (winter dredge Survey -- relative abundance data, annual harvest numbers)
- Oyster Restoration (habitat assessment, annual number of acres receiving restoration treatment for selected tributaries, ecosystem services)
- Jurisdictional Annual Oyster Surveys
- Striped Bass Coast-wide Spawning Stock Biomass and Fish mortality
- Striped Bass Juvenile Indices
- Menhaden (Potomac River pound net index, Fish mortality)
- American Shad (Fish count and catch-per-unit effort data)

- Organizations involved in data collect, analysis, and/or funding: Jurisdictions, MDNR, VIMS, MD and VA Oyster Interagency Teams, ASMFC, PRFC, PA Fish and Boat Commission, VA DGIF, CBSAC, NOAA, academic research partners, USACE, ORP, UMCES

Identified Research and Monitoring Needs: Sustainable Fisheries

- **Fish Habitat Outcome** – more information and better delineation of habitat types and fish utilization, including spawning, juveniles, forage areas, etc. Quantifying how much habitat is needed to support sustainable fish populations (thresholds?)
- **Forage Outcome** – currently identifying key forage species to begin an assessment of their contribution to the Bay forage base. This will entail analyzing data from multiple Bay academic institutions and agencies. Additional surveys and/or enhancement of existing surveys for betting monitoring
- **Socioeconomic data** – need to link New Agreement outcomes to people (Ex: value of sustainable fish populations and available fishing opportunities for local communities)
- **Invasive catfish** – better monitoring and early detection; distribution and tributary-specific population estimates; predation impacts on fish species
- **Blue Crabs** – CBSAC has identified specific research needs including analysis of summer trawl survey data and analysis of new sampling designs in the Winter Dredge Survey. Research needs are listed in each Blue Crab Advisory Report; Socioeconomic data – need to link New Agreement outcomes to people

Current Data:

Protect & Restore Vital Habitats

- SAV Abundance
- SAV Planting Efforts
- Fish Passage Stream Miles Opened
- Wetlands restored on agricultural land

- Organizations involved in data collect, analysis, and/or funding:

  VIMS, MD DNR, Virginia Department of Game and Inland Fisheries, Pennsylvania Fish and Boat Commission, Jurisdictions, CBP, Federals partners, State Fish Passage Coordinators

Identified Research and Monitoring Needs:
Protect & Restore Vital Habitats

- **Brook Trout** – habitat prioritization prelim model outputs and offer guidance on parameters to be tracked in order to report progress in intervals between 5 year population assessments

- **Black Duck** – habitat prioritization model/map (parallel to what's being done for brook trout)

- **Stream Health** – Establish 2008 baseline for Stream Health by 2015 (requires analysis of state BIBI data)

Current Data:
Protect & Restore Water Quality

- BMP implementation for annual progress
- Local land use data
- Chemical contaminants

- Organizations involved in data collect, analysis, and/or funding:

  Jurisdictions, local jurisdictions, CBP, local governments

Identified Research and Monitoring Needs: Protect & Restore Water Quality

- **Toxic Contaminants** – The methods for the CBPO contaminants indicator may need to be more refined than current methods, i.e. the segmentation used for the CBPO indicator reflects the 92 segments used for the TMDL and do not necessarily give an accurate picture of the extent or severity of chemical contamination in the Bay's tidal areas

- **BMP data** – Additional studies and information that demonstrate effectiveness of BMPs and BMP implementation. Research that links BMP effectiveness with monitoring data

- **Lag Times** – Increased understanding of the effect of lag times

Current Data:
Maintain Healthy Watersheds

- Collective mapping of state-identified healthy watersheds

- Organizations involved in data collect, analysis, and/or funding:

  MDNR, MDE, NYDEC, PA DEP, VCU, VA DCR, PA DCR, WV DEP, CBP, CBP GIS staff, EPA

Identified Research and Monitoring Needs: Healthy Watersheds

- Develop a method to track and report watershed health and protection and Watershed Vulnerability Assessments
- Create standard on how to measure health
- Understanding change (i.e. land use predictors of degradation)
- Definitional needs (i.e. what is the value of ecosystem services and what is a healthy watershed?)
- Build upon current policy (e.g., Antidegradation), Innovative Land Use, TDR, and Zoning Practices.
- Monitoring needs include:
  - Adequate programs to monitor and analyze watershed health
  - High-resolution land cover data to understand short term change and assess threats at multiple scales

Current Data:

Foster Chesapeake Stewardship

- Public Access (annual public access site counts)
- Protected Lands (# of acres conserved, measured every other year)
- Environmental Literacy (not currently collecting data, but in pilot program)

- Organizations involved in data collect, analysis, and/or funding:

  NPS, CBP, jurisdictions, USGS GIS Staff, DOE, NOAA, CBT, EPA

Identified Research and Monitoring Needs: Fostering Chesapeake Stewardship

- May be collecting new data based on new outcomes (citizen stewardship, engagement, environmental literacy outcomes)

- **Environmental Literacy** – To what extent Meaningful Watershed Educational Experiences (MWEEs) influence long term stewardship ethic in citizens

Current Data:
Tidal and Nontidal WQ Monitoring

- Collected for Water Quality Standards Attainment Assessments:
  - Tidal (~161 stations) and Nontidal (~126 stations).
  - Parameters: DO, Chlorophyll a, Secchi depth, Nutrients (TP, TDP, TN, TDN, NH4, PO4…), Sediment (TSS), Organic Carbon (TOC, DOC) Turbidity, pH, Conductivity, SAV (aerial survey), Water Temperature, Benthic IBI, and Phytoplankton IBI.
  - Not all parameters measured at every station.
- USGS River Flow Gauges
- Fixed Station Vertical Profiles
- NOAA Buoys
- DATAFLOW plus Continuous Monitoring Sensors (3-year rotations; not a complete Bay data set)

Identified Research and Monitoring Needs: Tidal and Nontidal WQ Monitoring

- Spatial vs. Temporal data sets
- More representative DO assessments
  - Ex: Shallow Water vs. Mid-Channel DO dynamics
- Use and Analysis of Continuous Monitoring Sensors
- Finding linkages between Watershed inputs and the Tidal Bay responses
- Monitoring of targeted BMP effectiveness
- Monitoring small watersheds
- Stream Health Indicator enhancement

Current Data:
Chesapeake Bay Program Modeling

- Fertilizer, Manure, Legumes, Crop cover, Land-use, BMP acres, Maximum update, Uptake Curve data: 1985, 1987, 1992, 1997, 2002, 2005
- Septic data
- Point source data
- Atmospheric Deposition Data: 1984 – 2005
- Meteorology and Precipitation Data:1984 – 2011
- Hydrology Simulations: 1984 – 2005
- Soil Data
- Elevation Data
- Nitrogen, Phosphorus, and Sediment loads

Identified Research and Monitoring Needs:
Chesapeake Bay Program Modeling

Airshed Model

- Update Airshed Model to new CMAQ Bidirectional Ammonia Model

Watershed Model

- Revise watershed modeling system structure
- Revisit Watershed Model calibration methods, including regional factors

WQSTM

- Refine and update the Water Quality and Sediment Transport Model (WQSTM)
- Refinement of shallow water simulation for improved assessment of open water DO and SAV/clarity standards

TMDL Charges

- Examine the influence of climate change (CC) on Chesapeake WQ standards and the 2010 Bay TMDL
- Effects of Conowingo infill on Chesapeake Bay WQS
- Influence of oyster filter feeders on water quality, with increased aquaculture and sanctuary development
- Review James River chlorophyll criteria and James River TMDL allocations

STAR Requests

- Assess and Explain Water Quality Trends

Current GIT Data or Science Driven Products

- CBP Indicators
- Advisory Reports
- Restoration/Management Reports and Plans
- Scientific Reports
- Annual Progress towards WIPs and TMDL Goals
- Executive Order Reports
- Landscope
- Bay Barometer
- Chesapeake Stat

STAR Response and Next Steps

- To address the needs of the new Bay Agreement, STAR is evolving to have more of an ecosystem-based science mission.

- Facilitate with science partners to have increased capacity to serve the priority science needs of the GITs.
- Help coordinate the modeling, monitoring, indicator, and information management activities needed by the GITs and work with CBP science partners to synthesize information for cross-cutting CBP products (such as the Bay Barometer and the new insights report).

Thank you to all of the GITs!

Questions and Discussion