Strategic Science & Research Framework: Initial Science Needs List

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STAR Meeting
February 28, 2019

Current State of the Science Needs

- Agenda for SRS meeting
- Update on MB and STAC feedback
- Input on how to do wider resource assessment (e.g. agencies, states, NGOs, academic)
- Initial science needs list breakdown

Current State of the Science Needs

- All GITs have provided input – thank you!! – still collecting
- Currently conducting initial resource assessment
  - GITs' initial resource assessments
  - CBPO modeling team, GIS team, staff
  - CBPO grants/contracts/agreements
  - Federal and state – for toxic contaminants
- Incorporating STAC workshop recommendations from 2014 on
- Working with STAC on how to engage them for feedback – potentially longer process
- Initial assessment of needs list – where are commonalities? What categories?

A Basic Breakdown of the Science Needs List

Chesapeake Bay Program
Science. Restoration. Partnership.

124 → **Total Needs Identified**

68 → **Needs that are not completed and not fully resourced**

Most have some resources or other contributions

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Of those 68, 58 were given a priority by GIT:

35 → **High**

7 → **Medium**

16 → **Low**

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Needs listed multiple times:

- **Cross-cutting monitoring alignment/monitoring resources**
- **Shallow water monitoring**
- **SAV habitat in changing climate**

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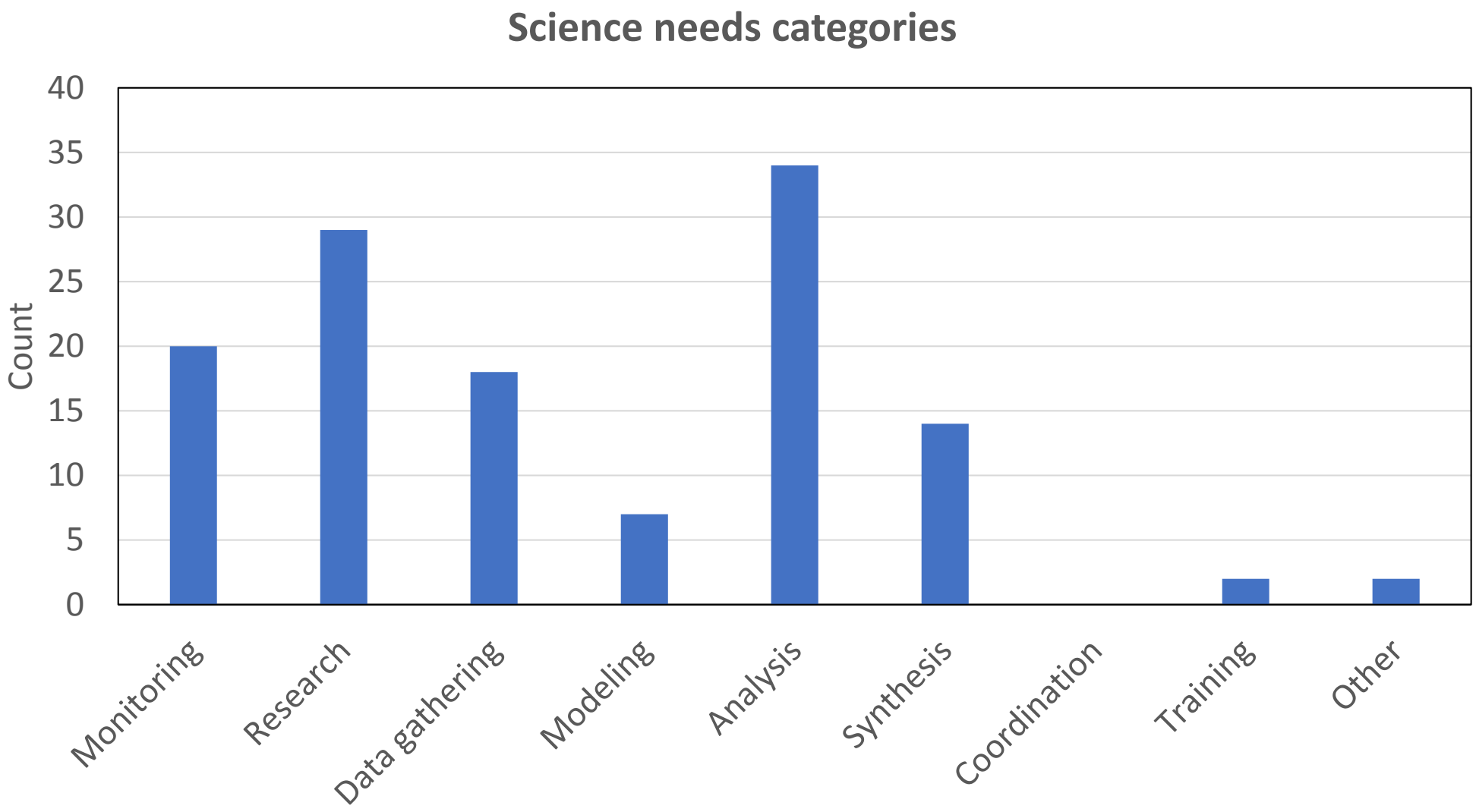
Needs related directly to development or update of indicator:

- Forage fish indicator development
- Climate indicator development – fish distribution
- Stream Health indicator reporting
- Brook trout monitoring efforts for indicator
- New black duck indicator based on habitat acreage/baseline
- Tracking framework for potential healthy watersheds sustainability indicator
- Stewardship Indicator data collection support every 3-5 years
- Diversity indicator target/goal

A Basic Breakdown of the Science Needs List



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Needs flagged for environmental monitoring:

- Phytoplankton and zooplankton monitoring
- Shallow water monitoring
- Vertical water column monitoring
- Oyster restoration monitoring
- Brook trout monitoring
- Toxics contaminants monitoring in fish/shellfish
- Citizen science monitoring
- Forest buffer cover change monitoring
- Tree canopy change monitoring

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Needs flagged for research:

- Ecosystems services
- Blue catfish predation
- Gauging public perceptions and fishery stakeholder views
- Biological lift from stream restoration
- Monitoring presence/absence fish species
- Spatial-temporal groundwater model expansion
- PCB sources and fate in environment
- BMP effectiveness at PCB removal
- Effects of toxic contaminants on fish and shellfish
- BMP response to climate change
- Precipitation changes due to climate change
- Sea level rise and subsidence impacts in changing climate
- Social science and human behavior behind climate change
- Climate change impacts on SAV
- Climate change impacts on invasive species
- Green infrastructure performance under climate change
- Climate change impacts on wetlands
- Climate change impacts on fish species

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Needs flagged for modeling:

- Expand groundwater model for brook trout
- Black duck bioenergetics modeling
- Finer scale water quality modeling
- Implement estuary model in local waters
- Characterize BMP removal uncertainty due to climate change
- Better understand precipitation changes from climate change

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Needs related to climate change estimations:

- SAV habitat availability
- Healthy watershed vulnerability
- Impacts to public access sites
- Mapping projected climate impacts for protected lands
- Human behavior response
- Impacts on invasive species
- Green infrastructure performance
- Impacts to wetlands
- Impacts to fish species abundance

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Examples of possible cross-pollination:

- Climate change estimations → modeling team
- Citizen science monitoring → monitoring needs
- Stream Health analysis & reporting → biological lift, brook trout monitoring, healthy watersheds assessments, marginally healthy watersheds
- Shallow water monitoring → estuary model in local waters
- Living resource modeling → fish habitat assessment case studies, oyster restoration monitoring
- Advancing/incorporating social science approaches → model human attitude/behavior relations, gauging public perceptions & fishery stakeholder views, implications of human response to climate change/motivation and needs of communities to adapt
- Land use/Land change metrics → forest buffer, tree canopy, healthy watershed vulnerability, protected lands threats