Chesapeake Bay Program
Science. Restoration Partnership.

Sustainable Fisheries GIT: Forage

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Through the Chesapeake Bay Watershed Agreement*, the Chesapeake Bay Program has committed to…*

Goal: *Sustainable Fisheries*

Outcome*: Forage*

Continually improve the Partnership's capacity to understand the role of forage fish populations in the Chesapeake Bay. By 2016, develop a strategy for assessing the forage fish base available as food for predatory species in the Chesapeake Bay.

What We Want

We want to address habitat factors affecting important forage species.

1

Setting the Stage:

What are our assumptions?

Logic Behind Our Outcome

Following the Decision Framework:

Factors	Current Gaps	Management Approaches
• Scientific and Technical Understanding • Monitoring/Survey Costs • Habitat Impacts	• Lack of forage monitoring data • Understanding of forage/habitat relationship	• Define forage species and what comprises the forage base • Determine the forage base status and define a “balanced state” • Inform management decisions to address sustainability of forage base

2

Progress:

Are we doing what we said we would do?

What is our progress?




STAC Workshop and Report

Identified important forage and provided recommendations for further action

GIT-Funded Studies

Developed a suite of forage indicators and predator consumption profiles

Investigated environmental drivers of forage population trends

Communications Efforts

Worked with CBP videographer to create a video highlighting the importance of forage

Partner Collaboration

Developed striped bass indicators

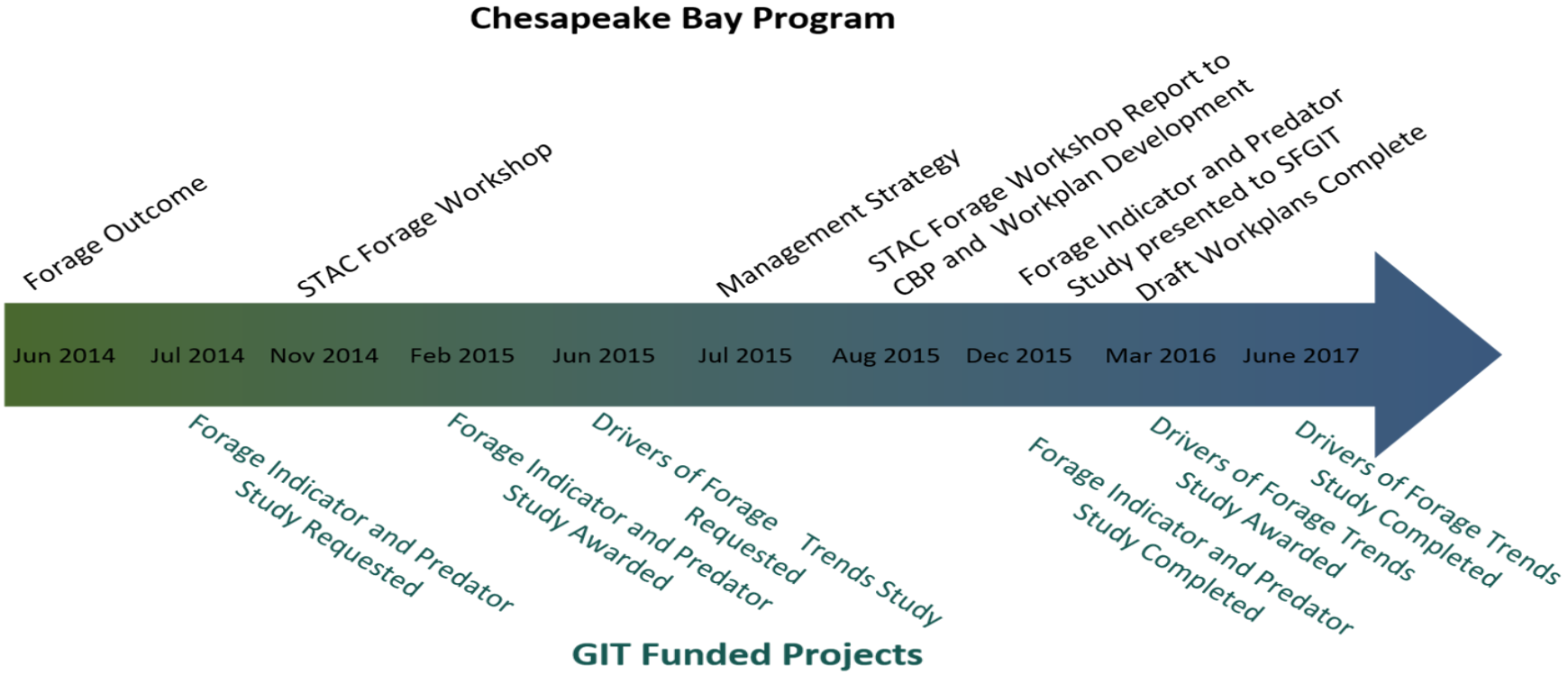
Designed two small-scale citizen monitoring efforts for forage fish and benthos

Developed a strategy to guide future efforts

Analysis

Takeaways:

- Great strides in improving forage understanding through the CBP!
- Further research is necessary to determine the state of forage and if/what management is needed



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Challenges:

Are our actions having the expected effect?

Challenges

- Increased monitoring is needed to improve understanding:
  - Zooplankton monitoring data
  - Forage species monitoring data Baywide (especially invertebrates)
  - Predator diet data from tributaries and shallow waters
- Need to improve understanding of the relationship between forage species and shoreline condition
- Need to establish management expectations for sustainable forage populations (from fisheries managers)
  - For ecosystem (human, avian, fish, etc.)

4

Adaptations:

How should we adapt?

Based on what we've learned, we plan to…

- Incorporate forage species into the 2018 STAC Fish Habitat Workshop
  - Workshop will explore habitat stressors and impact on habitat function
- Improve outreach to local communities and counties
- Continue working with citizen scientists to increase monitoring data
- Look for further funding opportunities to continue advancing our understanding of forage species and increase monitoring data collection

What We Want

MB Members: Establish a comprehensive strategy to assess tidal shoreline throughout the bay and evaluate development of shoreline condition thresholds or metrics.

MD and VA: Make zooplankton/phytoplankton monitoring a priority. Develop strategy to gather monitoring data.

Discussion

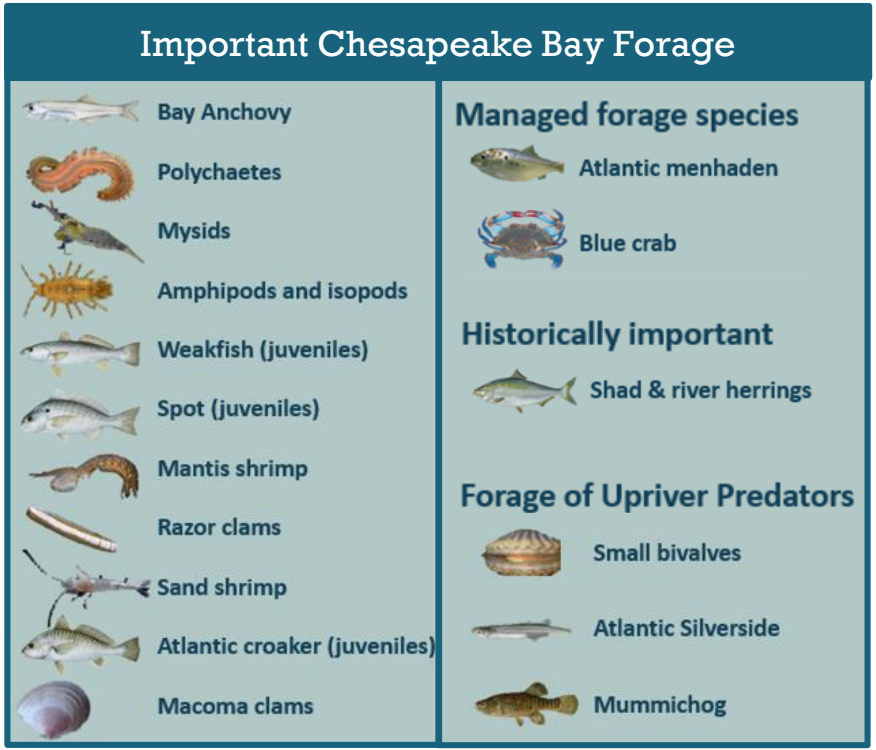
Extra Slides

Analysis

What forage species are important in the Chesapeake Bay?

- 10 important forage species from analysis plus 6 species selected by experts
- Half of the forage species are invertebrates
- Many are not typically considered "forage"

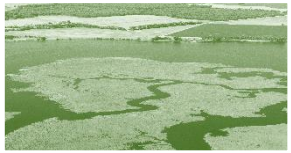
-From STAC Workshop Report



Top 10 Important Chesapeake Bay forage species according to an analysis of representative tidal water predator species are pictured at left. Additional important forage at right were selected by experts to include managed, upriver and historically important species.

Analysis

What factors are influencing forage populations?



Habitat

Water Quality

Shoreline hardening

Predation (human, fish, birds)

Land Use/ Development

Food resources for forage

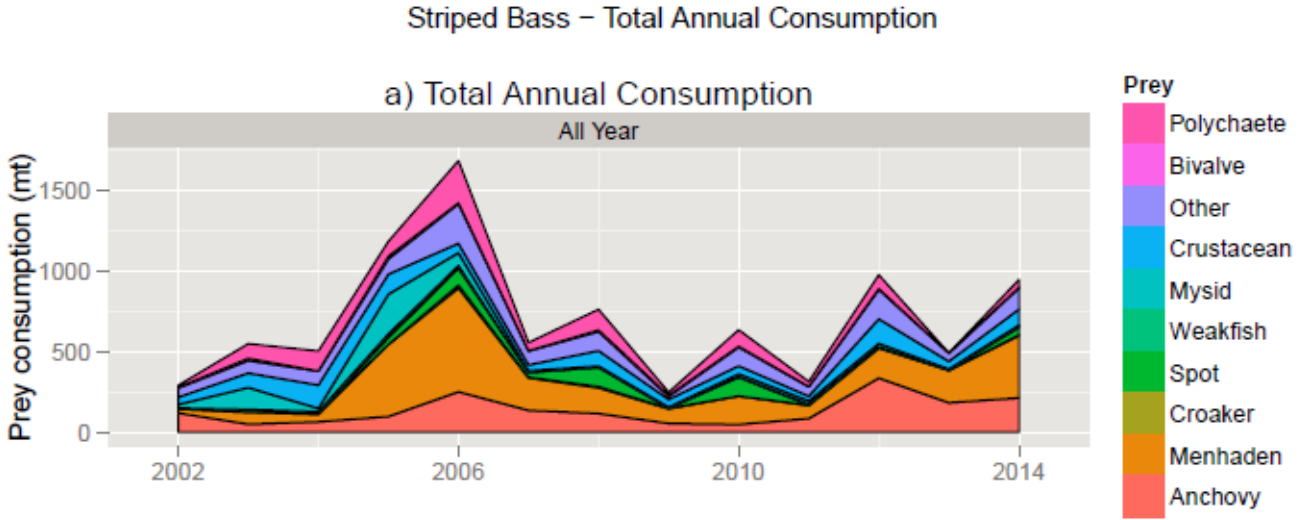
Climate Change/ Sea Level Rise

Fishing and Catch removals

-From STAC Workshop Report

Analysis

What is the predator response to forage?



Predator consumption changes over time; likely due to prey availability

- General decrease in mysid consumption across studied predators
- Increase in bay anchovy and polychaetes consumption in fish diets

-From UMCES Forage Study