STAR Meeting
Fisheries GIT Science Needs

7/29/2015

Please help yourself to some fishy treats

Action Items from June STAR Meeting

Forestry:

- Work on methods for analysis of high-resolution imagery (GIS Team & Land Use Workgroup)
- Ramp up forest buffer planting
- Assess new techniques to get improved implementation of buffers (Sally, Carl H., STAR)

Toxics:

- Prioritization process for next toxics to look at (discussion with STAC/STAR, Scott, Greg)
- How to report continued understanding? How to report this? (discussion with STAC/STAR, Scott)

Action Items from June STAR Meeting

SAV:

- Continued funding needed for aerial surveys, still a shortfall for annual surveys (STAR Amigos, Greg, Rich, Bob Orth, chairs of SAV workgroup)

Water Quality:

- Are we providing the needs of the WQGIT, using monitoring data and trend analysis, for the Mid-Point Assessment (MPA)? (Jeni & Lucinda discussion)
- Need to better define the lag time between implementing practices and relationship with water-quality and SAV response.
- Incorporating sea level rise into model (Gary, Mark)

CBP Sponsor	Topic	Timeframe
Water Quality Goal Implementation Team (WQGIT)	Corps of Engineer's Draft Lower Susquehanna River Watershed Assessment Report	Completed
Scientific, Technical, Assessment and Reporting Team's (STAR) Criteria Assessment Procedures Workgroup	2015 Chesapeake Bay Criteria Addendum	Summer 2015
STAR's Criteria Assessment Procedures Workgroup	Proposed revised James River chlorophyll a water quality criteria	Summer 2015
STAR's Integrated Trend Analysis Team	Application of WRTDS to watershed WQ trend analysis and explanations and General Additive Models (GAMs) to estuarine WQ trend analysis and explanations	Fall 2015
WQGIT's Watershed Technical Workgroup	Chesapeake Bay Scenario Builder	Winter 2016
STAR's Modeling Workgroup	Phase 6 Chesapeake Bay Watershed Model	Winter 2016
STAR's Modeling Workgroup	Chesapeake Bay Water Quality/Sediment Transport Model (WQSTM)	Spring 2016
STAR's Climate Change Workgroup	Approach being taken to factor climate change considerations into the 2017 Chesapeake Bay TMDL Midpoint Assessment	Summer 2016

Fisheries GIT Outcomes to Discuss

Blue Crab Abundance Outcome

Blue Crab Management Outcome

*Oyster Outcome*

Forage Fish Outcome

Fish Habitat Outcome

+ Additional Reported Indicators

Purpose of Meetings

- Work with Goal Teams to discuss science activities needed to carry out Management Strategies and Work Plans
  - Modeling and decision tools
  - Monitoring/indicators
  - Analysis and reporting
- Discuss current resources (CBPO or other partners) available to address science needs (and be reflected in work plans)
  - Identify responsible science providers
- Determine remaining science gaps
  - Suggest potential new partners/efforts
- STAC & STAR are working together to help Goal Team, each with different responsibilities

Oyster Restoration Begins with…

https://www.youtube.com/watch?v=G3XnINCOTbI
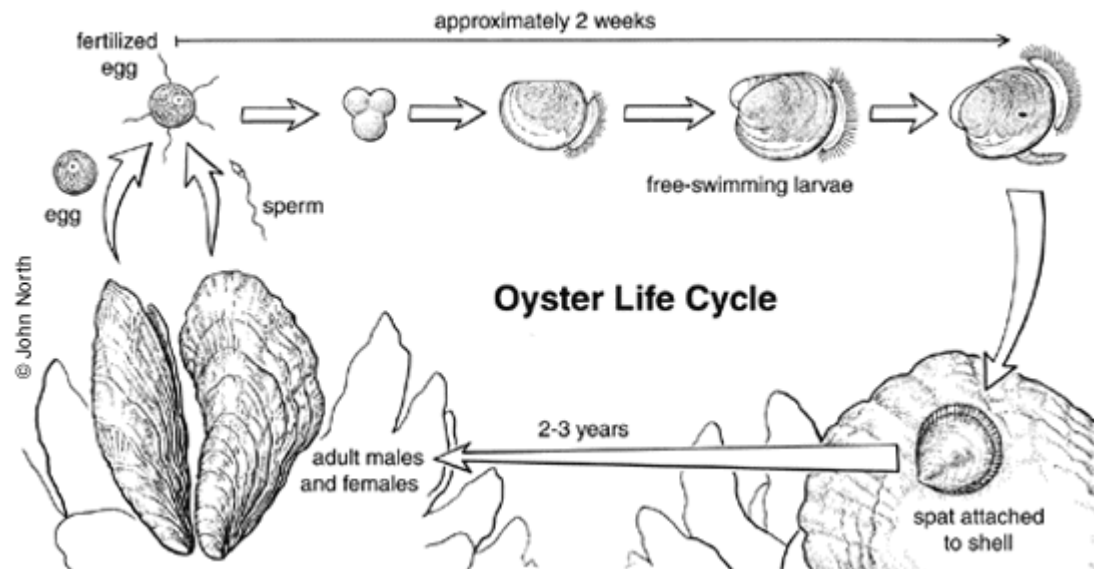
Oyster

Restore native oyster habitat and populations in 10 tributaries by 2025.

Current Indicators:
Restoring Oyster Reefs (Informational)

Potential New Indicators:
Number of Tributaries Restored (6 year waiting period)
- What can be the interim indicator?

Monitoring: To be monitored by those doing restoration work?, Assessment Protocols in Table 1

Science Needs: Identification of additional 4 reefs to restore, Data tools and management (COD)

Restoration Criteria: Is the process for determining a reef restored complete and measurable?

Operational goals:
- *"Shell, alternative substrate, or spat-on-shell should cover a minimum of 30% coverage throughout the target reef area"*
- *"A minimum of 50% of currently restorable area that constitutes at least 8% of historic oyster habitat within a given tributary meets the reef-level goals defined above"*
- Additional Criteria found in Table 1

Blue Crab

Abundance
- 2012 target of 215 million adult females
- Refine population targets through 2025

Management
- Manage for a stable and productive crab fishery
- By 2018, evaluate the establishment of a Bay-wide, allocation-based management framework with annual levels set by the jurisdictions

Current Indicators:
Blue Crab (Spawning-Age Females) Abundance
Blue Crab Fishery Management – Indication of targets and thresholds

Monitoring Plan:
Bay Wide Winter Dredge Survey & Catch Reports

Possible Science Needs: Gear efficiency study between MD and VA surveys; shallow water survey, applying/integrating summer trawl data into population assessment, understanding relative impact of stressors (predation, cannibalism, habitat loss; and other non-harvest factors on blue crab populations)

Forage Fish

By 2016, develop a strategy for assessing the forage fish base

Indicator:

Being determined through project with UMCES

Monitoring:

Metrics related to forage fish, fish population assessments...however **indicator/s will determine if data gaps exist**
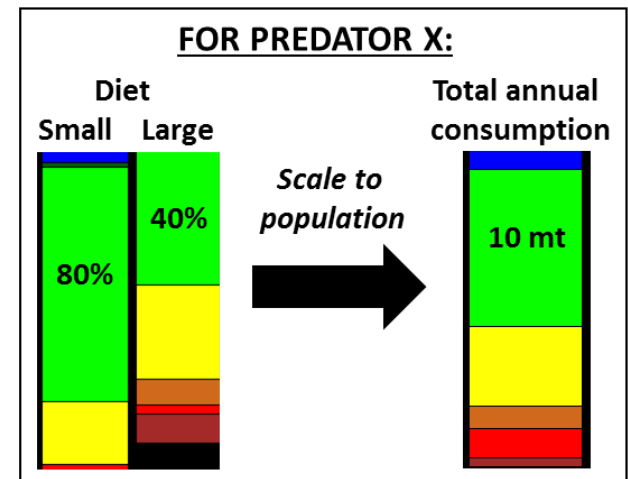
Science Needs:

Further determination after indicator development, possible extension of zooplankton and phytoplankton monitoring
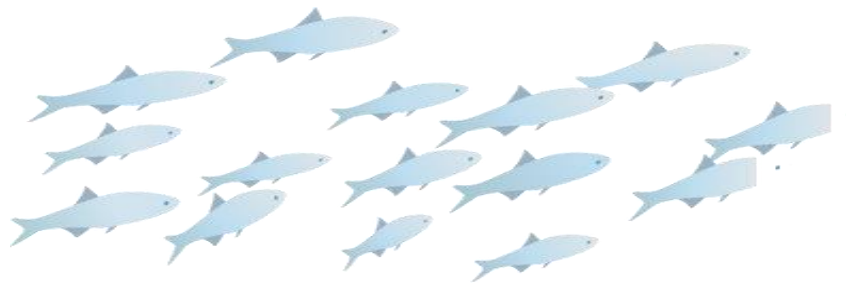
Project Objectives

1. Develop a suite of forage indicators of key prey species in Chesapeake Bay
   - Track status of forage through time

2. Develop a nutritional profile for five dominant predatory fishes
   - Scaling consumption to bay-wide population
   - Compare effects of different predators on forage base and relative importance of prey (accounting for size and seasonal diet changes)

Andre Buchheister
Ed Houde
Carlos Lozano

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Objective 1. Develop forage indicators

| Forage indicator |
|---|
| 1. Relative prey abundance |
| 2. Diet-based indices |
| 3. Predator-prey ratios |
| 4. Consumption ratios |

- Metrics identified in Forage Workshop
- Suites of indicators are more informative than a single metric*
  - ChesMMAP – case study for multiple indicator types

*Rice and Rochet 2005, Methratta and Link 2006

Objective 2 – Develop nutritional profile

- Calculate annual, bay-wide consumption of key prey by 5 dominant predators
- Seasonal & size-specific consumption estimates based on dietary changes (but constrained by available data).

FOR PREDATOR X:

Diet
Small   Large

80%   40%

Scale to population

Total annual consumption

10 mt
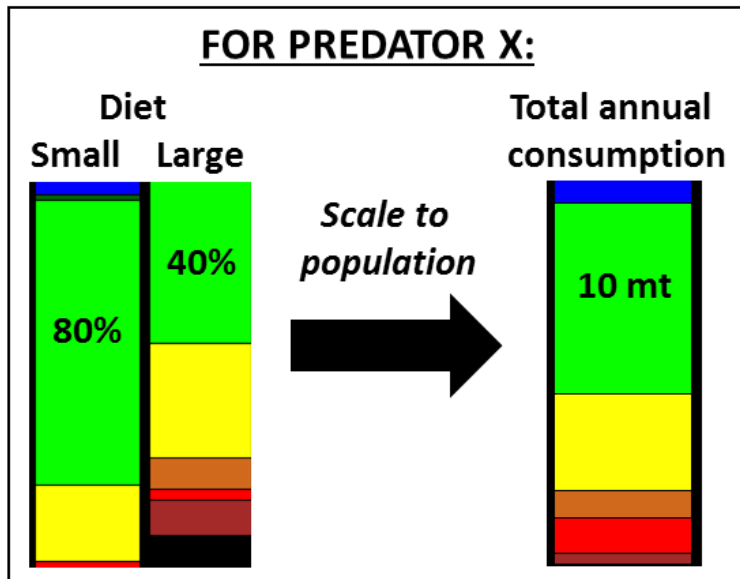
Key Prey Groups

Pelagic fishes
- Bay anchovy
- menhaden

Demersal fishes
- Croaker
- Spot,
- Weakfish

Mysids

Worms

Bivalves

Crustaceans

Key Predators
(75% of CM catch by wt[1])

White perch   Atlantic croaker

Striped bass   Spot

Summer flounder

[1]Buchheister et al. 2013

Expected outcomes

- Obj. 1 – Time series of multiple forage indicators
    - Quantify the status of several key prey groups through time
    - Integrate information from multiple surveys
  - Basis for future development of target and threshold indicator values for adaptive fisheries management
- Obj. 2 – Nutritional profiles for five dominant predators
    - Quantify consumption of different key prey groups
    - Aid in developing forage indicators
    - Supply basic information on observed consumption patterns that managers can share with concerned stakeholders
- Status
    - Data (available indices & raw data) mostly compiled, calculating prey indices
    - Deadline of December, 2015

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Fish Habitat

- Identify and characterize critical spawning, nursery and forage areas
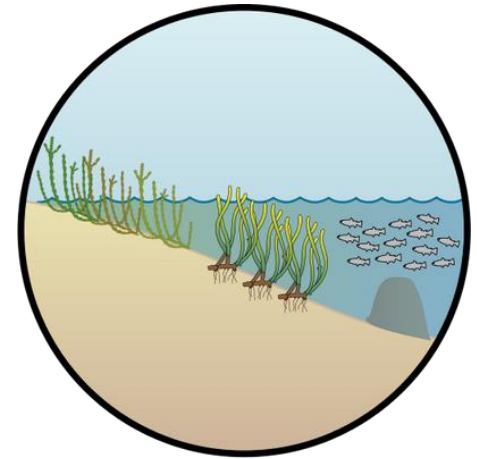- Use existing and new tools to integrate information and conduct assessments

Current Indicator:
None

Potential Indicator:
Location and size of spawning, nursery and forage areas

Needs: Process to identify and map such habitats, measure fish in actual habitat areas, shallow water monitoring, increased understanding habitat requirements of fish

Other Existing Indicators

Currently on the website and could potentially be part of the outcome indicators:

- *Striped Bass Abundance*
- *Striped Bass Fishery Management*
- *Striped Bass Juvenile Abundance Index*
- *American Shad Abundance*
- *Atlantic Menhaden Abundance*
- *Atlantic Menhaden Fishery Management*

Are there science needs or gaps for these?