



## Forage Fish Outcome – 2020-2021

**Long-term Target:** Develop a comprehensive suite of indicators that will track the status of the Chesapeake Bay forage base. **Two-year Target:** Develop 1-3 initial indicators that can be used to assess the status of forage in Chesapeake Bay.

<b>Instructions:</b> Before your quarterly progress meeting, provide the status of individual actions in the table below using this color key.
Action has been completed or is moving forward as planned.
Action has encountered minor obstacles.
Action has not been taken or has encountered a serious barrier.

Additional instructions for completing or updating your logic and action plan can be found on [ChesapeakeDecisions](#).

Factor Current		Efforts Gap Actions Metrics			Expected	Response and Application	Learn/Adapt
<i>What is impacting our ability to achieve our outcome?</i>	<i>What current efforts are addressing this factor?</i>	<i>What further efforts or information are needed to fully address this factor?</i>	<i>What actions are essential (to help fill this gap) to achieve our outcome?</i>	<i>What will we measure or observe to determine progress in filling identified gap?</i>	<i>How and when do we expect these actions to address the identified gap? How might that affect our work?</i>	<i>What did we learn from taking this action? How will this lesson impact our work?</i>	

					<i>going forward?</i>	
<p><b>Scientific and Technical Understanding:</b></p> <p>Lack an understanding of the presence, abundance, and diversity of forage species in shallow water estuarine habitats and the</p>	<p>Small-scale citizen science forage monitoring effort with local watershed organizations led by PEARL.</p> <p>State trawl and seine surveys provide</p>	<p>Need more comprehensive sampling of forage abundance and nearshore habitat use across the Bay to better understand how populations are affected by</p>	<p><b>3.1</b> Continue to support research efforts related to key forage species and consider how results can be applied to indicator development and management.</p>	<p>Increased understanding of factors affecting forage status in the Bay.</p>	<p>Several research studies and analyses are expected to be completed within the next two years. The results of these various research efforts will contribute to the development</p>	<p>Support for key research has been a major driver bringing this action team closer to the development of a suite of forage indices.</p>

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<p>influence of environmental and anthropogenic factors on forage abundance.</p>	<p>some forage abundance data. Various GIT- and NCBO-funded research projects focused on forage species and habitat.</p>	<p>environmental factors and habitat availability. Plankton monitoring would provide essential information about food availability for forage species in the Bay.</p>	<p><b>4.1</b> Collaborate with CBP partners and other interested parties to identify and evaluate options for shallow water monitoring and plankton surveys.</p>		<p>of forage indicators, which will assess and track the status of the forage base in the Bay.</p>	<p>There is continued interest in filling Shallow water monitoring needs but the team needs higher level management support. In the future, action team membership should be identified to “champion” and lead conversations surrounding monitoring.</p>
<p><b>Partner Coordination:</b></p> <p>Coordinated support and participation across CBP partners are needed to facilitate</p>	<p>The 2014 STAC workshop identified a suite of potential forage indicator species. A GIT-funded study identified</p>	<p>Need to identify forage species most important to managers. Require collaborative input on potential</p>	<p><b>1.1</b> Prioritize key species for indicator development.</p>	<p>Development of forage indicators.</p>	<p>Development of forage indicators to assess the status of the forage base in the Bay is the primary goal of the Forage Fish Outcome. The first</p>	<p>The Indicator Development Plan, that guided the team’s indicator discussion/implementation proved to be a useful/effective tool for providing</p>

<p>better understanding and management of the forage base. Collaboration on the selection of indicators to monitor the forage base would ensure multiple benefits of development and use amongst managers and other CBP partners.</p>	<p>a suite of potential forage indicators. The shoreline threshold study was presented to the Fish GIT and the Forage Action Team.</p>	<p>forage indicators from federal, state, and nongovernmental entities. Need to collaborate with other CBP workgroups and partners to make cross-cutting, mutually-beneficial connections for indicator development and monitoring.</p>	<p><b>2.1</b> Develop an initial suite of indicators to assess and track the status of the forage base available to predators.</p>	<p>Indicators are expected to be complete within the next two years. These initial indicators will provide a framework on which we can continue to develop indicators that will be useful for managers.</p>	<p>direction/priorities for the team</p>
			<p><b>2.2</b> Assist Climate Resiliency Workgroup in identifying and evaluating climate indicators related to forage.</p>		
			<p><b>4.1</b> Collaborate with CBP partners and other interested parties to identify and evaluate options for shallow water monitoring and zooplankton surveys.</p>		

<p><b>Public, Nongovernmental Organization, and Government Agency Engagement:</b></p> <p>Communicating the importance and status of the forage base is key to ensuring understanding of and investment in a healthy Chesapeake Bay ecosystem.</p> <p>Communicating results of forage research and identifying applications ensures that the best available science is used to inform management.</p>	<p>Communicated the value of forage to the public through a CBP video.</p> <p>Recommended the prioritization of BMPs that benefit forage species and fish habitat for a Fish Habitat WIP Fact Sheet.</p> <p>The Fish GIT and the Forage Action Team regularly schedule research presentations to inform partners of forage-related projects.</p>	<p>Need to synthesize and present research in ways that can engage a variety of audiences.</p>	<p><b>3.2</b> Communicate the results of ongoing forage research to a variety of audiences.</p>	<p>Increased awareness of the importance of forage in the Bay and factors that affect forage status.</p>	<p>Production and distribution of media content will bring awareness of the importance of forage to the public. Sharing research will also ensure that the best available data are used to inform management decisions.</p>	<p>Actions such as these emphasize the importance of effectively highlighting progress/results for multiple Bay Program audiences. In the future, we plan to coordinate with communication-focused professionals to create effective materials showcasing forage value, status and trends. There will be emphasis on the relationships between forage “health” and water quality.</p>
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**ACTIONS – 2020-2021**

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
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**Management Approach 1: Identify and prioritize forage species.**

<p><b>1.1</b></p>	<p>Prioritize key species for indicator development.</p>	<p>Of the key forage and predator species listed in the 2014 STAC workshop report, identify priority species for initial indicator development.</p> <p><a href="https://www.chesapeakebay.net/documents/22031/final_stac_forage_workshop.pdf">https://www.chesapeakebay.net/documents/22031/final_stac_forage_workshop.pdf</a></p>	<p>Forage Action Team</p>	<p>Bay-wide</p>	<p>Spring 2020</p>
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**Management Approach 2: Evaluate and communicate status of priority forage species.**

<b>2.1</b>	Develop an initial suite of indicators to assess and track the status of the forage base available to predators.	Select 1-3 priority forage indicators related to habitat, predator consumption, and abundance for which data already exist.	Forage Action Team	Bay-wide	Spring 2020
		Develop selected indicators.	NCBO, Forage Action Team	Bay-wide	November 2021

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<b>2.2</b>	Assist Climate Resiliency Workgroup in identifying and evaluating climate indicators related to forage.	Advise CRWG on how forage abundance and distribution may be incorporated into a climate resiliency indicator.	Forage Action Team, NCBO, CRWG, Pls	Bay-wide	Fall 2020
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**Management Approach 3: Inform management decisions to better address sustainability of the forage base.**

<b>3.1</b>	Continue to support research efforts related to key forage species and consider how results can be applied to indicator development and management.	Work with CBP partners to develop a GIS product that maps shoreline conditions around the Chesapeake Bay using the shoreline development thresholds identified.	Forage Action Team, Fish Habitat Action Team, GIS Team	Bay-wide	Summer 2020
		Use the shoreline threshold results and map to inform a habitat indicator of percent shoreline development for forage.	Forage Action Team	Bay-wide	November 2021
		Complete the NCBO-funded Habitat Suitability Model study and use the results to inform an indicator of available suitable habitat for forage.	Forage Action Team, Pls	Bay-wide	November 2021
		Complete the NCBO-funded studies of key predators in shallow foraging habitats and use the results to inform a predator consumption indicator.	Forage Action Team, Pls	Bay-wide	November 2021

		Evaluate potential for GIT/CBT to fund research on the abundance and population dynamics of key forage species (e.g., mysids).	Forage Action Team, NCBO, Pls	Bay-wide	Spring 2021
		Provide support for the Bay-specific abundance estimate analyses and use the results to inform forage indicators.	NCBO, Pls, Forage Action Team	Bay-wide	Winter 2021
		Provide support for the Chesapeake Bay telemetry network and use the tagging data to inform movements of key predators and forage species in the Bay.	NCBO	Bay-wide	Ongoing
<b>3.2</b>	Communicate the results of ongoing forage research to a variety of audiences.	Examine opportunities to create videos, articles, and other content to share the importance of forage and project results with the scientific community and the larger Chesapeake Bay community.	Forage Action Team, Comms Team, Pls	Bay-wide	Ongoing

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		Present forage-related research to the Fish GIT, the Forage Action Team, and other relevant groups.	Forage Action Team, Pls	Bay-wide	Ongoing
<b>Management Approach 4: Maximize the efficiency of monitoring programs and build on existing efforts.</b>					
<b>4.1</b>	Collaborate with CBP partners and other interested groups to identify and evaluate options for shallow water monitoring and plankton surveys.	Evaluate the potential for field sampling of forage species in nearshore habitats at sentinel sites around the Bay in coordination with partners.	Forage Action Team, SAV WG, TNC	Bay-wide	Fall 2020
		Identify and evaluate options for sampling plankton communities to inform forage indicators.	Forage Action Team, NCBO	Bay-wide	Spring 2021

		Examine the potential to expand the citizen science monitoring effort throughout the Bay and to conduct analyses of forage-habitat associations.	Forage Action Team, PEARL, PIs	Bay-wide	Ongoing

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