CONNECTING FISH HABITAT TO WATER QUALITY

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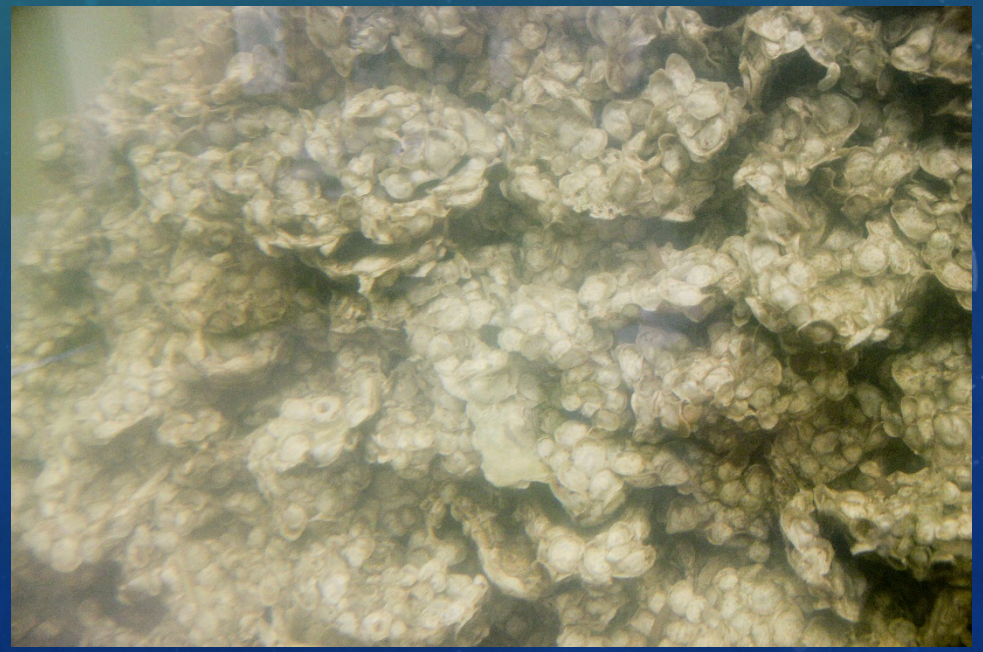
THE IMPORTANCE OF FISH HABITAT

- Fish and shellfish in the Chesapeake Bay Watershed rely on a variety of habitats throughout the watershed
- These habitats, which are key to sustaining fisheries, are being threatened by a suite of stressors such as increased urbanization, poor water quality and climate change
- Successful fisheries management depends on knowing where these important habitats are and addressing the potential and realized threats to their integrity

- Fish Habitat Management Strategy

WHO IS ADDRESSING FISH HABITAT IN THE CHESAPEAKE BAY?

- **The Fish Habitat Action Team** under the Fish GIT brings federal, state, non-profit, academic, and stakeholder partners together to address fish habitat issues
  - The team convenes 2-4 times per year to discuss their individual efforts, learn about research, and collaborate on joint projects
  - In preparation for the biennial review, the team reviewed actions from the previous two years and identified how the Chesapeake Bay Program could assist them in achieving their objectives



WHAT IS THE OBJECTIVE OF THE FISH HABITAT ACTION TEAM?

To inform, engage, and communicate with partners to improve effectiveness of fish habitat conservation and restoration efforts

TO BETTER ACHIEVE THE FISH HABITAT OBJECTIVE:

The team used the biennial review to request that fish habitat considerations be included in the Watershed Implementation Plans

WHAT ARE WATERSHED IMPLEMENTATION PLANS?

Watershed Implementation Plans are developed by Bay jurisdictions to help determine how they will meet their pollution reduction goals

WHY WATERSHED IMPLEMENTATION PLANS?

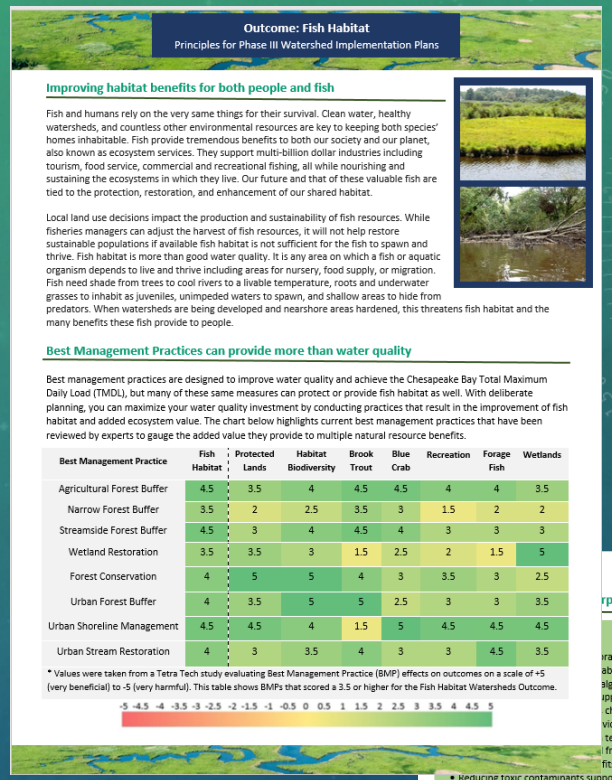
Watershed Implementation Plans offer an established method of connecting with partners who are actively planning and implementing projects in the Chesapeake Bay Watershed

THE CHESAPEAKE BAY PROGRAM APPROVED THIS EFFORT, NOW WHAT?

A group consisting of members of the CBP's Management Board, jurisdictional water quality leads, and CBP staff are meeting regularly and developing materials to incorporate ecosystem benefits into the guidance for Watershed Implementation Plans

WHAT DO WE HAVE SO FAR?

- A series of draft fact-sheets that succinctly capture:
  - Value of ecosystem benefits
  - Scoring of currently approved projects which offer multiple ecosystem benefits
  - Contact lists for planners to reach out to jurisdictional subject matter experts
  - Links to tools and resources



Outcome: Fish Habitat
Principles for Phase III Watershed Implementation Plans

Improving habitat benefits for both people and fish

Fish and humans rely on the very same things for their survival. Clean water, healthy watersheds, and countless other environmental resources are key to keeping both species' homes inhabitable. Fish provide tremendous benefits to both our society and our planet, also known as ecosystem services. They support multi-billion dollar industries including tourism, food service, commercial and recreational fishing, all while nourishing and sustaining the ecosystems in which they live. Our future and that of these valuable fish are tied to the protection, restoration, and enhancement of our shared habitat.

Local land use decisions impact the production and sustainability of fish resources. While fisheries managers can adjust the harvest of fish resources, it will not help restore sustainable populations if available fish habitat is not sufficient for the fish to spawn and thrive. Fish habitat is more than good water quality. It is any area on which a fish or aquatic organism depends to live and thrive including areas for nursery, food supply, or migration. Fish need shade from trees to cool rivers to a livable temperature, roots and underwater grasses to inhabit as juveniles, unimpeded waters to spawn, and shallow areas to hide from predators. When watersheds are being developed and nearshore areas hardened, this threatens fish habitat and the many benefits these fish provide to people.

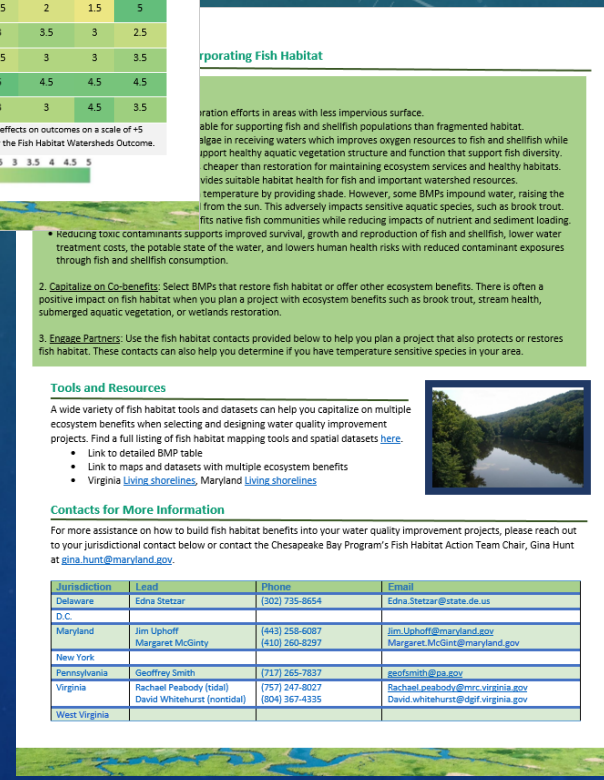
Best Management Practices can provide more than water quality

Best management practices are designed to improve water quality and achieve the Chesapeake Bay Total Maximum Daily Load (TMDL), but many of these same measures can protect or provide fish habitat as well. With deliberate planning, you can maximize your water quality investment by conducting practices that result in the improvement of fish habitat and added ecosystem value. The chart below highlights current best management practices that have been reviewed by experts to gauge the added value they provide to multiple natural resource benefits.

Best Management Practice	Fish Habitat	Protected Lands	Habitat Biodiversity	Brook Trout	Blue Crab	Recreation	Forage Fish	Wetlands
Agricultural Forest Buffer	4.5	3.5	4	4.5	4.5	4	4	3.5
Narrow Forest Buffer	3.5	2	2.5	3.5	3	1.5	2	2
Streamside Forest Buffer	4.5	3	4	4.5	4	3	3	3
Wetland Restoration	3.5	3.5	3	1.5	2.5	2	1.5	5
Forest Conservation	4	5	5	4	3	3.5	3	2.5
Urban Forest Buffer	4	3.5	5	5	2.5	3	3	3.5
Urban Shoreline Management	4.5	4.5	4	1.5	5	4.5	4.5	4.5
Urban Stream Restoration	4	3	3.5	4	3	3	4.5	3.5

* Values were taken from a Tetra Tech study evaluating Best Management Practice (BMP) effects on outcomes on a scale of +5 (very beneficial) to -5 (very harmful). This table shows BMPs that scored a 3.5 or higher for the Fish Habitat Watersheds Outcome.

-5 -4.5 -4 -3.5 -3 -2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5



rporating Fish Habitat

ration efforts in areas with less impervious surface.
able for supporting fish and shellfish populations than fragmented habitat.
algae in receiving waters which improves oxygen resources to fish and shellfish while
pport healthy aquatic vegetation structure and function that support fish diversity.
cheaper than restoration for maintaining ecosystem services and healthy habitats.
vides suitable habitat health for fish and important watershed resources.
temperature by providing shade. However, some BMPs impound water, raising the
from the sun. This adversely impacts sensitive aquatic species, such as brook trout.
fits native fish communities while reducing impacts of nutrient and sediment loading.
- Reducing toxic contaminants supports improved survival, growth and reproduction of fish and shellfish, lower water treatment costs, the potable state of the water, and lowers human health risks with reduced contaminant exposures through fish and shellfish consumption.

2. Capitalize on Co-benefits: Select BMPs that restore fish habitat or offer other ecosystem benefits. There is often a positive impact on fish habitat when you plan a project with ecosystem benefits such as brook trout, stream health, submerged aquatic vegetation, or wetlands restoration.

3. Engage Partners: Use the fish habitat contacts provided below to help you plan a project that also protects or restores fish habitat. These contacts can also help you determine if you have temperature sensitive species in your area.

Tools and Resources

A wide variety of fish habitat tools and datasets can help you capitalize on multiple ecosystem benefits when selecting and designing water quality improvement projects. Find a full listing of fish habitat mapping tools and spatial datasets here.

- Link to detailed BMP table
- Link to maps and datasets with multiple ecosystem benefits
- Virginia Living shorelines, Maryland Living shorelines

Contacts for More Information

For more assistance on how to build fish habitat benefits into your water quality improvement projects, please reach out to your jurisdictional contact below or contact the Chesapeake Bay Program's Fish Habitat Action Team Chair, Gina Hunt at gina.hunt@maryland.gov.

Jurisdiction	Lead	Phone	Email
Delaware	Edna Stetzar	(302) 735-8654	Edna.Stetzar@state.de.us
D.C.			
Maryland	Jim Uphoff Margaret McGinty	(443) 258-6087 (410) 260-8297	Jim.Uphoff@maryland.gov Margaret.McGint@maryland.gov
New York			
Pennsylvania	Geoffrey Smith	(717) 265-7837	geofsmith@pa.gov
Virginia	Rachael Peabody (tidal) David Whitehurst (nontidal)	(757) 247-8027 (804) 367-4335	Rachael.peabody@mrc.virginia.gov David.whitehurst@dgif.virginia.gov
West Virginia			

MULTIPLE ECOSYSTEM BENEFITS FROM WATER QUALITY PROJECTS

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WHAT ARE OUR NEXT STEPS?

- Continue working with group to finalize fact sheets
- Incorporate new resources and tools into the fact sheets as they become available
- Connect with Watershed Implementation planners as they design new projects
- Expand these written materials to suit a variety of audiences