

Freshwater Mussels and the Chesapeake Bay

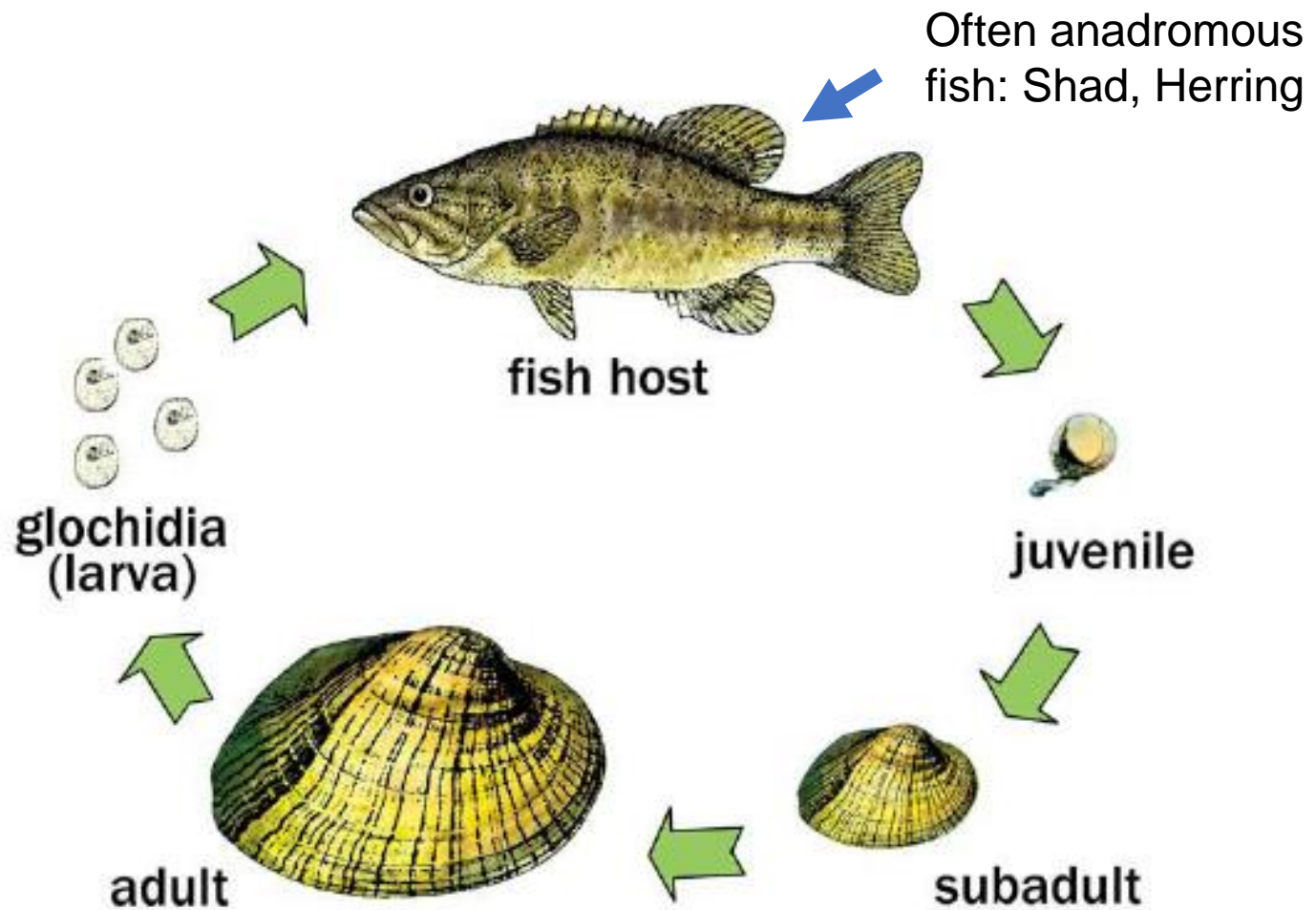


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What is going on here...



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Complex life cycles are central to understanding
Freshwater Mussels

The Top 10 Reasons the Chesapeake Bay Partnership should focus on freshwater mussels!



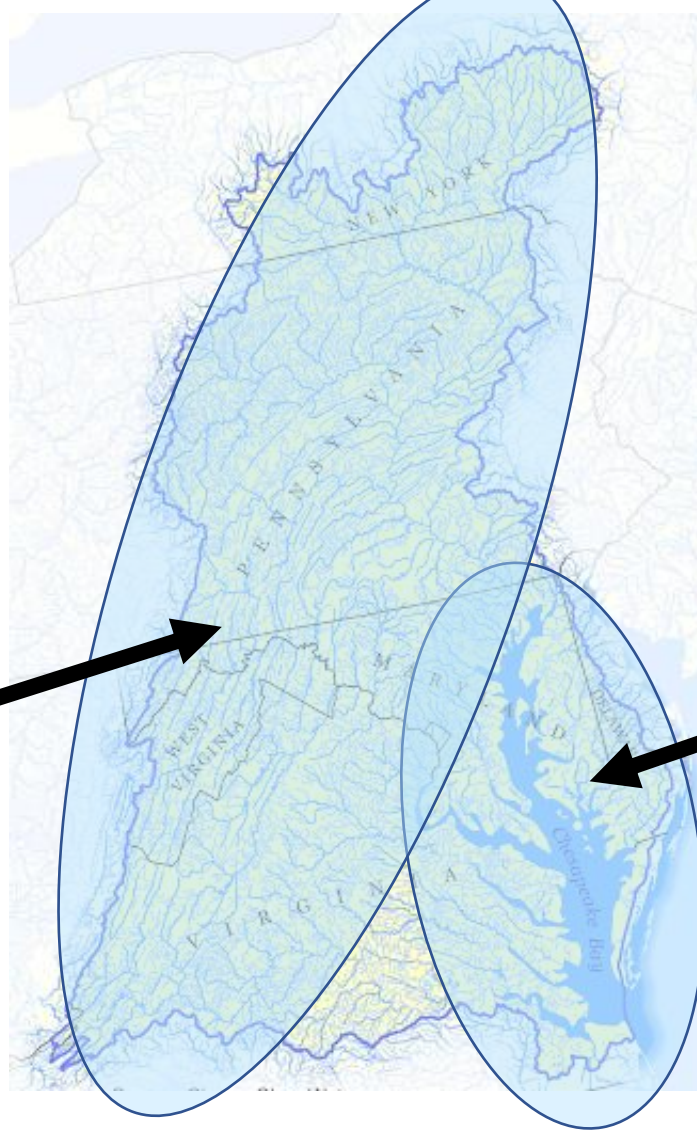
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WIMBY

What's in my back yard?



Potential Habitat is
ubiquitous across
freshwater



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10: IN CBW, You have a better chance of having a
mussel habitat in your backyard than crabs,
oysters or striped bass



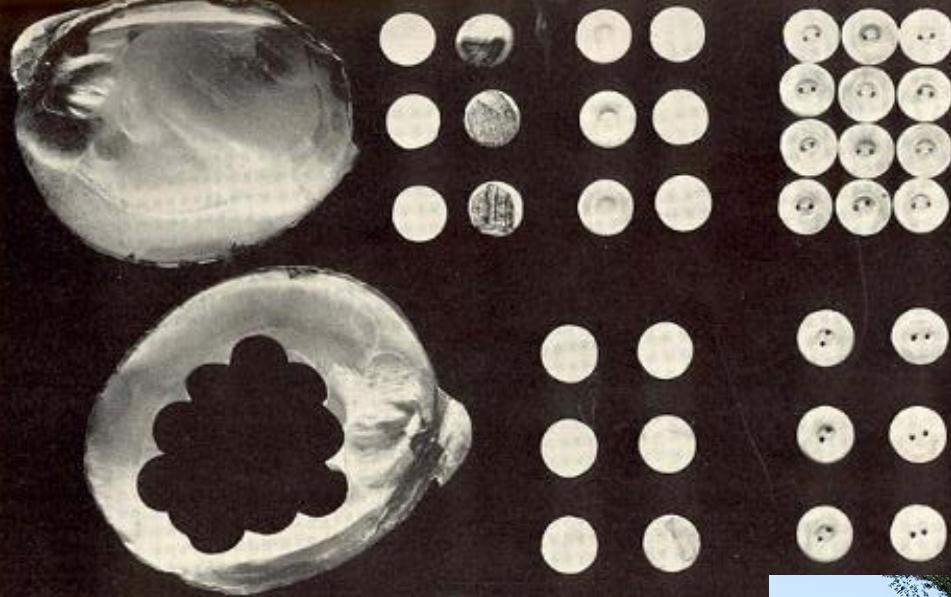
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FISHERIES GOAL: Protect, restore and enhance finfish, **shellfish** and other living resources, their habitats and ecological relationships to sustain all fisheries and provide for a balanced ecosystem **in the watershed** and Bay



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9. Mussels are covered under the umbrella of
Chesapeake Bay Goals

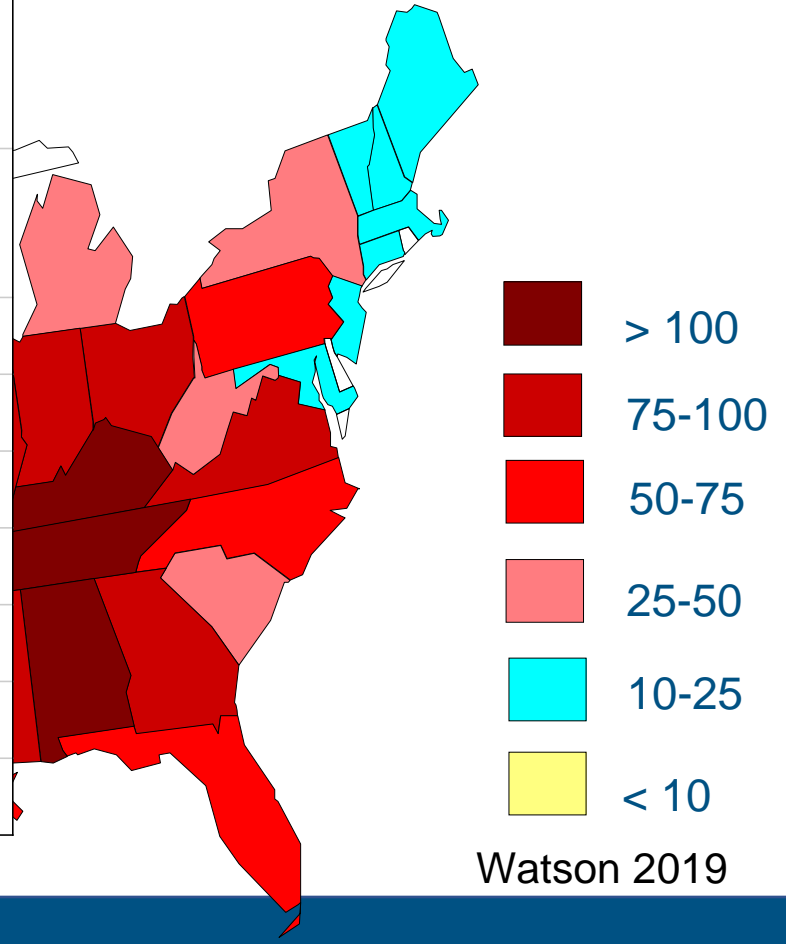


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8. We've lost the majority (~90%) of mussel populations due to many different issues.

Number of mussel species by state;

Geography:	Species in Bay Drainage
Bay Wide	28
DC	15
DE	11
MD	16
NY	13
PA	15
VA	23
WV	12



Estimates of N Removal by mussels:

Historic populations:

39,000- 11,400,000 lbs. N
per year (1-10% of N
loads)

Current (90% loss of mussels):

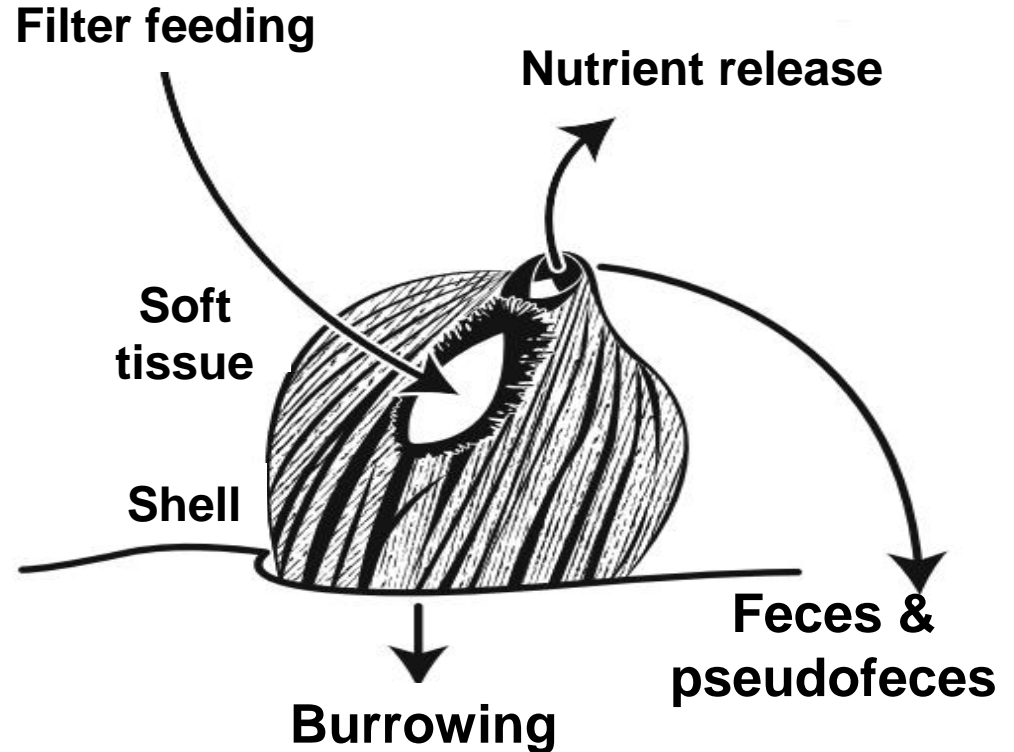
400-1,000,000 lbs. N per
year

.0003% - 0.8%

Using functional traits to assess the influence of burrowing bivalves on nitrogen-removal in streams

Zachary L. Nickerson · Behzad Mortazavi · Carla L. Atkinson

Contributions of freshwater mussels (Unionidae) to nutrient cycling in an urban river: filtration, recycling, storage, and removal



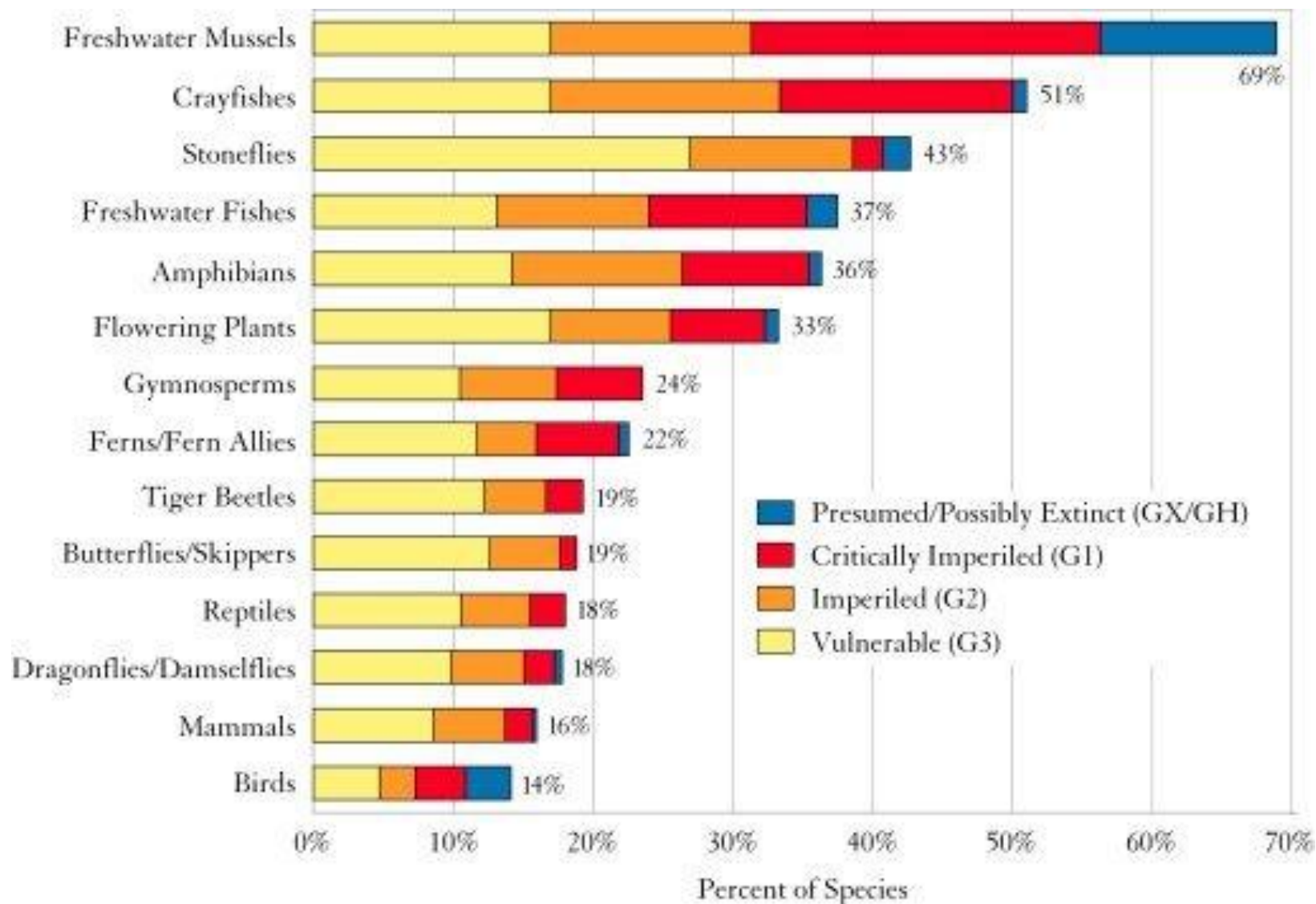
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6. Mussels Denitrify! Similar level of benefit to oysters.



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5. Mussels have other important ecosystem services! Clarity, Food Web, Habitat,



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4. Mussels are the MOST CRITICALLY IMPERILED group of organisms in North America

Virginia Fisheries Aquatic Wildlife Center,



Our ability to produce baby mussels has exponentially grown in the past 2 decades



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3. Freshwater mussel propagation has advanced significantly!

New Federal Funding is creating opportunities in this space



Background

The largest estuary in the nation, a corridor for migrating American shad and striped bass, a nursery for juvenile fish and blue crab, and the birthplace of Old Bay Seasoning: the Chesapeake Bay is a national treasure.

But by the late 20th century, pollution and mismanagement had taken a toll on this system. In response, Congress authorized the creation of the [Chesapeake Bay Program](#) to lead collaborative goal-driven restoration and protection efforts. Since its

Conservation Service, U.S. Army Corps of Engineers, the Governors of the Chesapeake Bay states (Virginia, West Virginia, Maryland, Delaware, Pennsylvania, and New York), the Mayor of the District of Columbia, the Chesapeake Bay Commission, fish and wildlife joint venture partnerships, and other public agencies and organizations. However the Service will seek input and participation from an even broader range of partners and stakeholders, building upon the strong collaboration and strategic work already underway in the basin.

build upon coalitions that are already in place and learn what efforts are underway, and examining exiting data, plans, and strategies.

- We are looking to an existing framework for regional conservation partnerships, known as joint ventures, as a model for ours. Joint ventures set clear, measurable goals, are flexible and inclusive, and leverage partner resources and contributions to design and implement successful landscape-scale conservation initiatives.
- While there are no supporting appropriations with which to establish



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2. New Federal Funding is creating exciting new opportunities in this space, but states need to invest to take advantage of this funding.



Photo Credit: Megan Marchetti – DWR



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1. Freshwater mussels are an amazing part of our natural heritage that we don't want to lose.

1. Invest in People! Mussel biologists are critical to understanding and restoring mussels.

1. 1-2 NEW FTEs per state including staff dedicated to inventory, monitoring and restoration.

2. Investments in Mussel Infrastructure and restoration

1. PA: Increase hatchery capacity and support for Susquehanna Basin. ~\$2M
2. MD: Finalize new mussel hatchery. ~\$2M
3. VA: Facilitate expansion at Harrison Lake Fish Hatchery ~\$2

3. Educate and Engage the Public:

1. Outreach, Educational Programming
2. Funding for replica printing

4. Continuing Bay clean up efforts! Improve Habitat for Freshwater Mussels: Water Quality, Fish Passage.



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How can jurisdictions invest in Freshwater mussels