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Concurrent Sessions B: Case Studies - Dam Impact Analysis Model for Atlantic Salmon in the Penobscot River, Maine

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Dam Impact Analysis on the Penobscot River

Julie L. Nieland, Timothy F. Sheehan,
and Rory Saunders

June 27, 2013

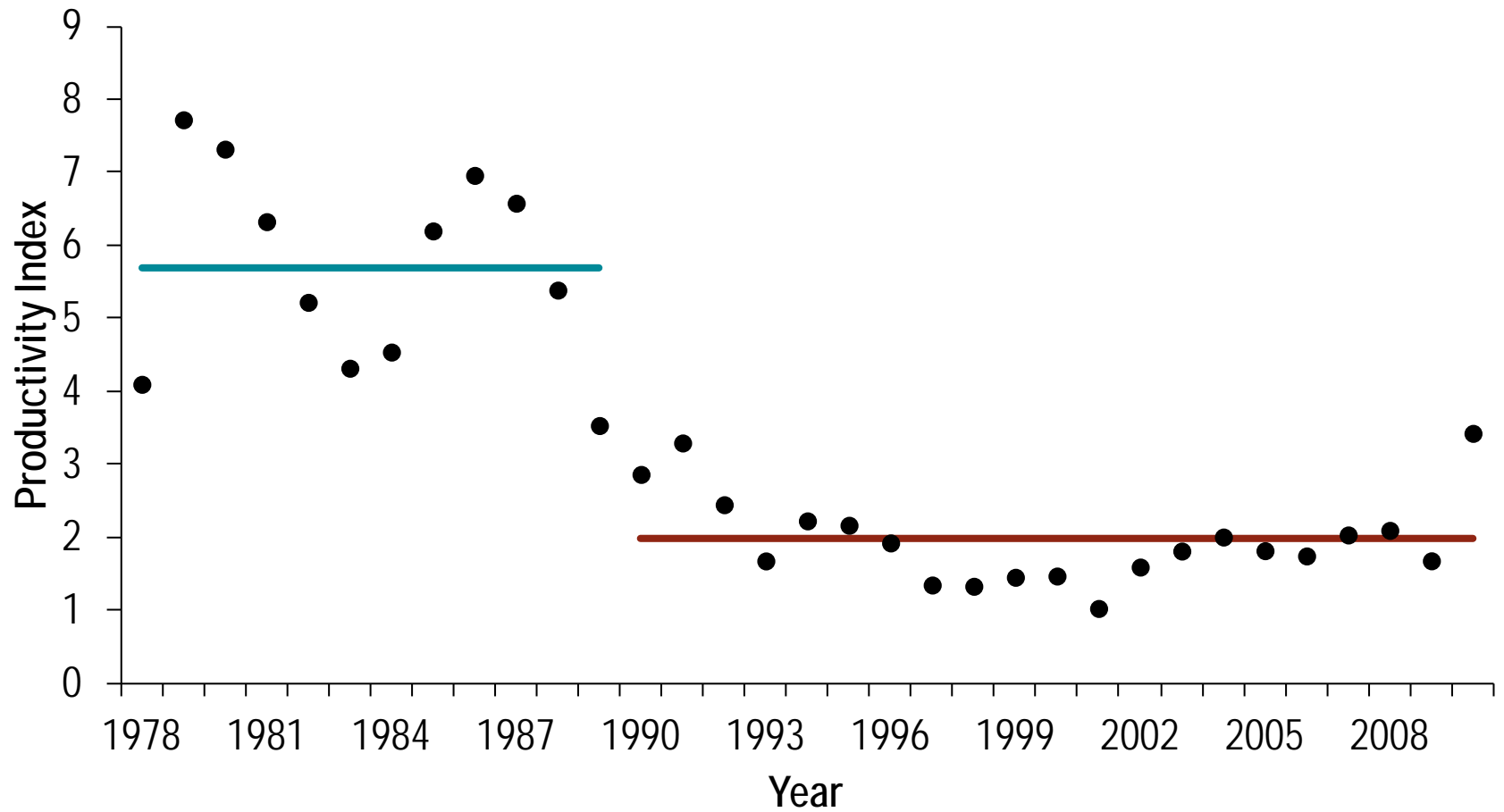
Overview

- Background information about Atlantic salmon in the Northeastern United States.
- Dam Impact Analysis model.
- Scenarios focused on dams.

U.S. Atlantic Salmon

- Atlantic salmon populations in the United States
 - Many populations are extant or endangered.
 - Marine survival and dams have contributed to the current low abundance.

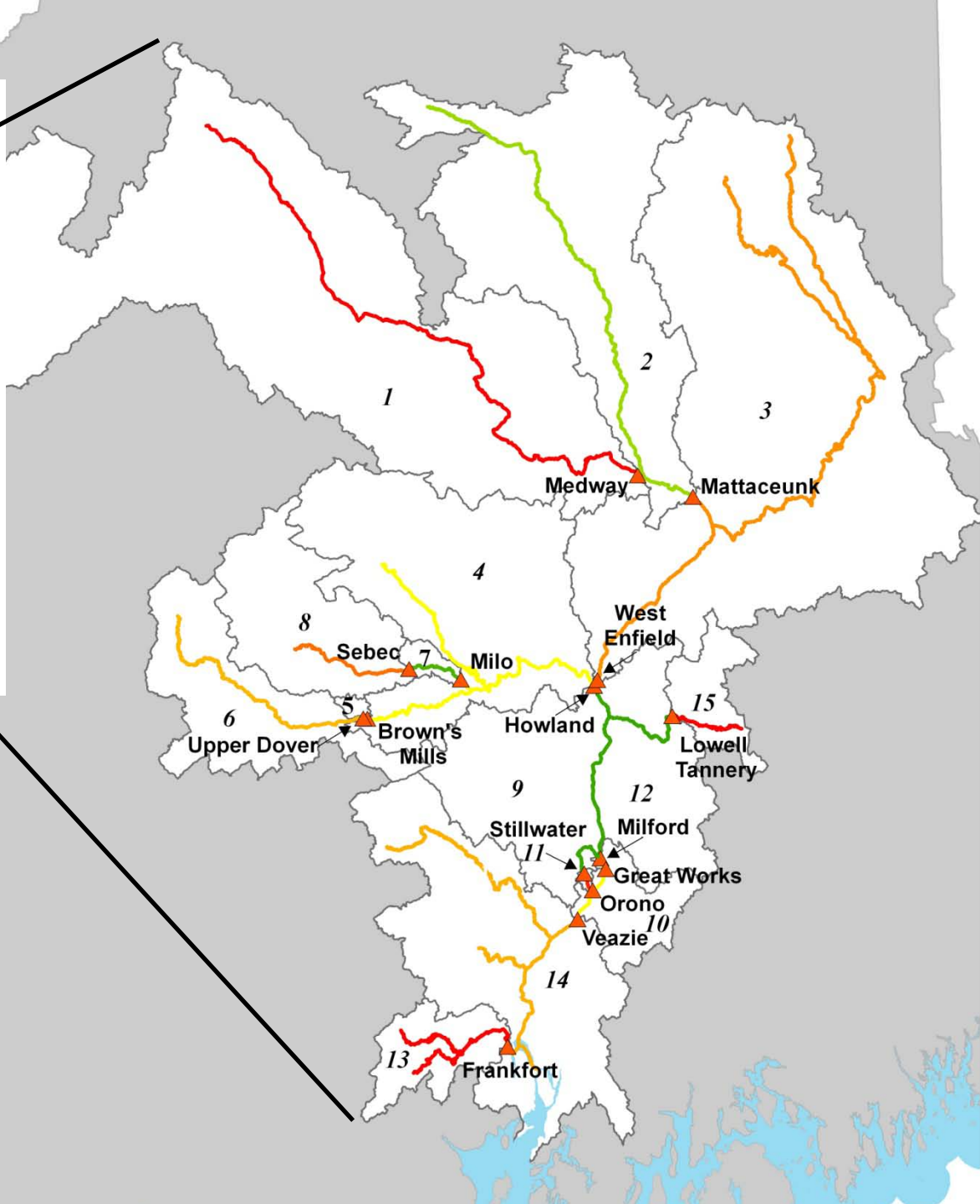
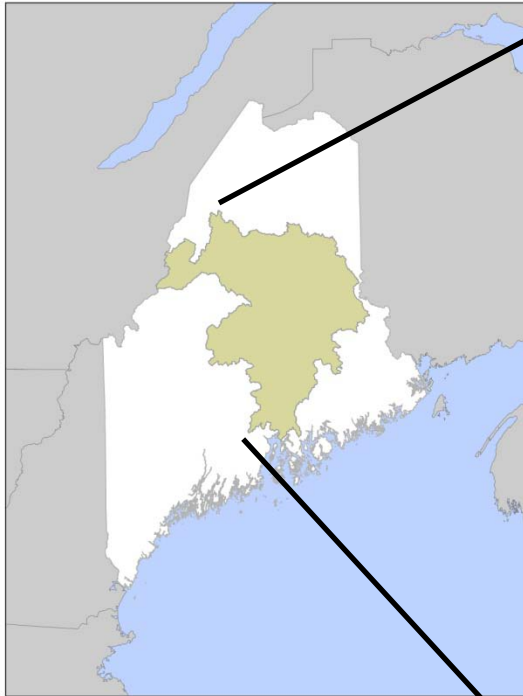
Marine Productivity



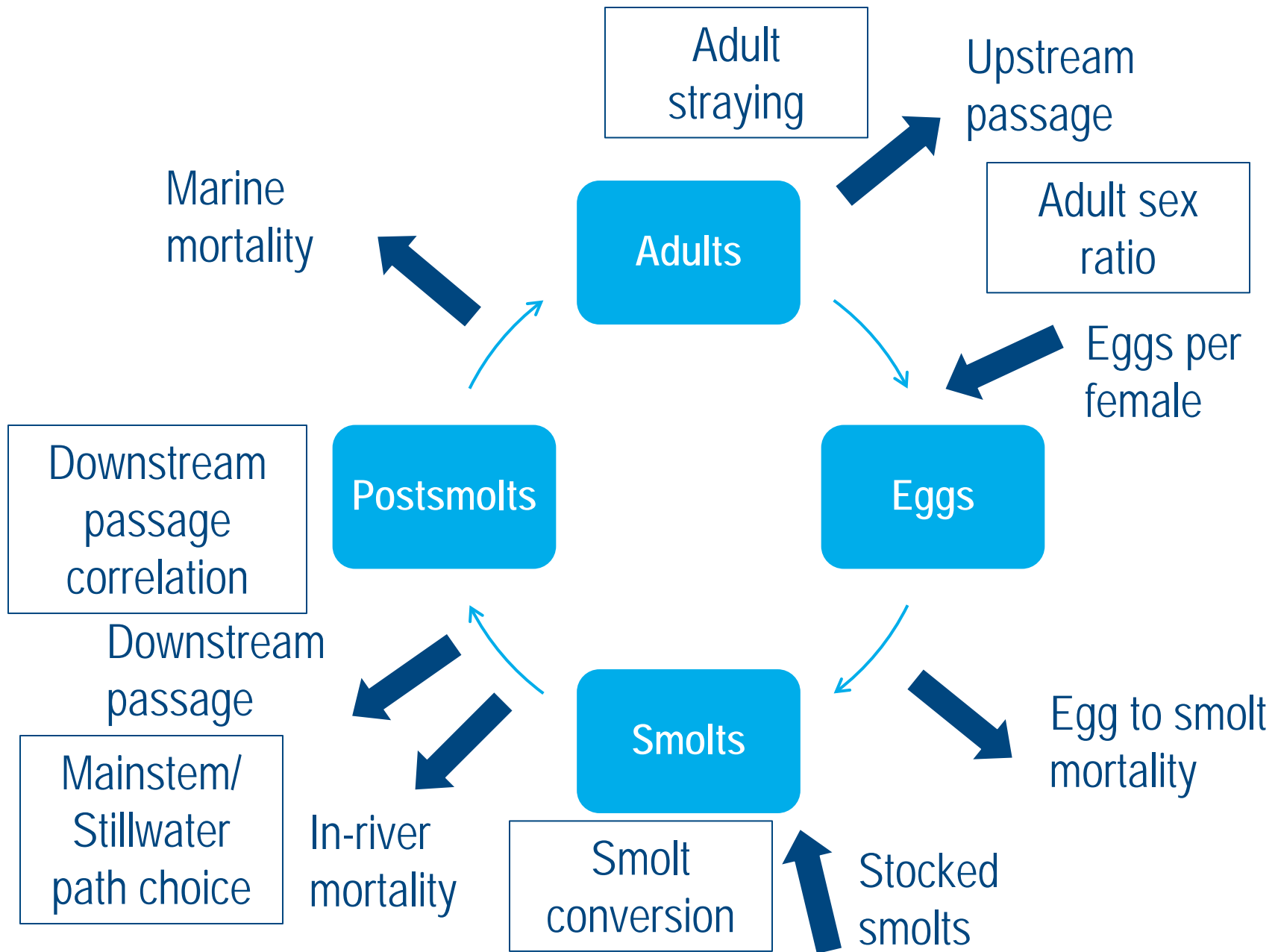
Dams

- Many negative effects of dams on Atlantic salmon.
- We can change how dams impact Atlantic salmon through:
 - Improving passage efficiency.
 - Removal.
- Dam Impact Analysis.





Penobscot River Watershed

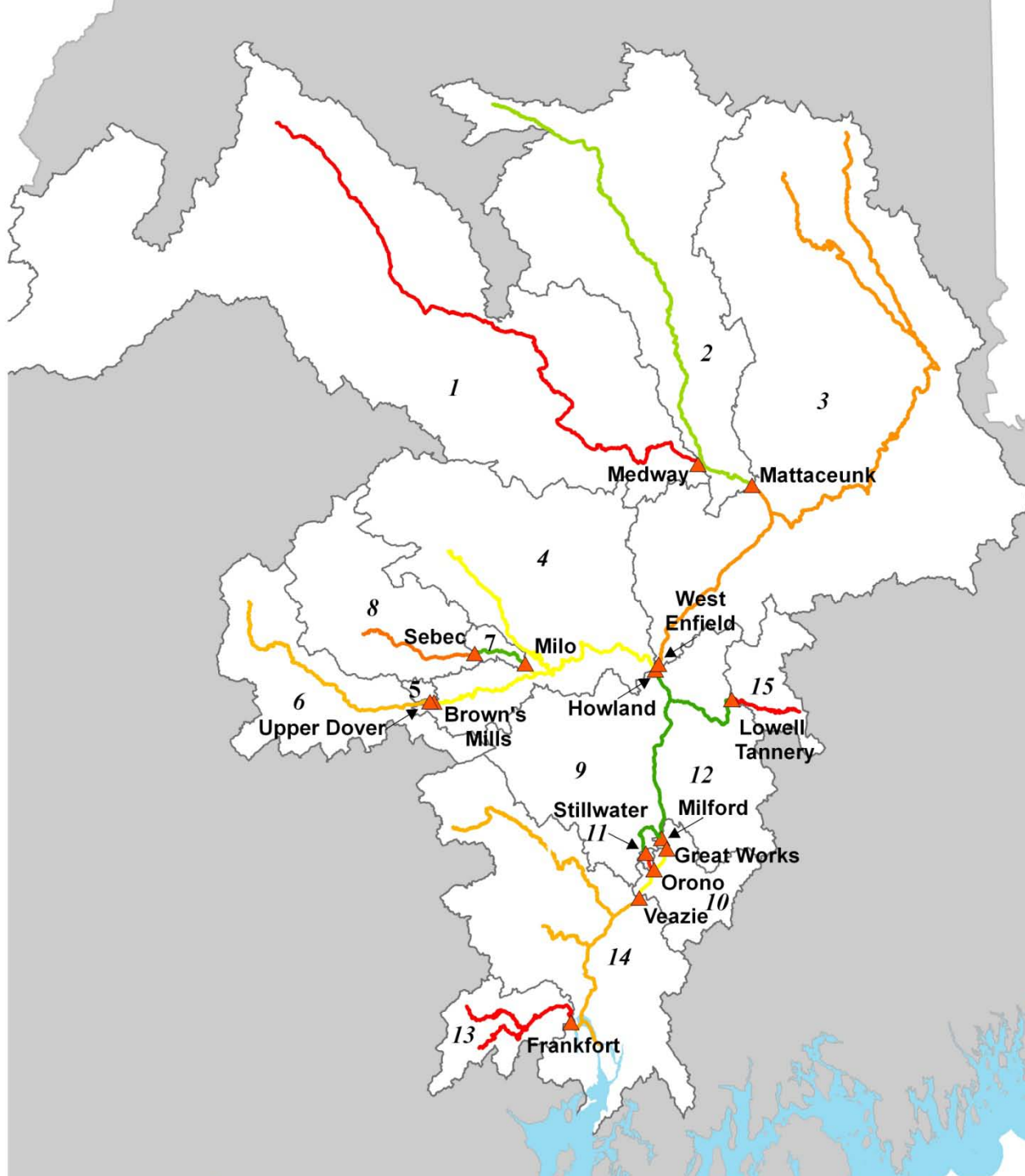


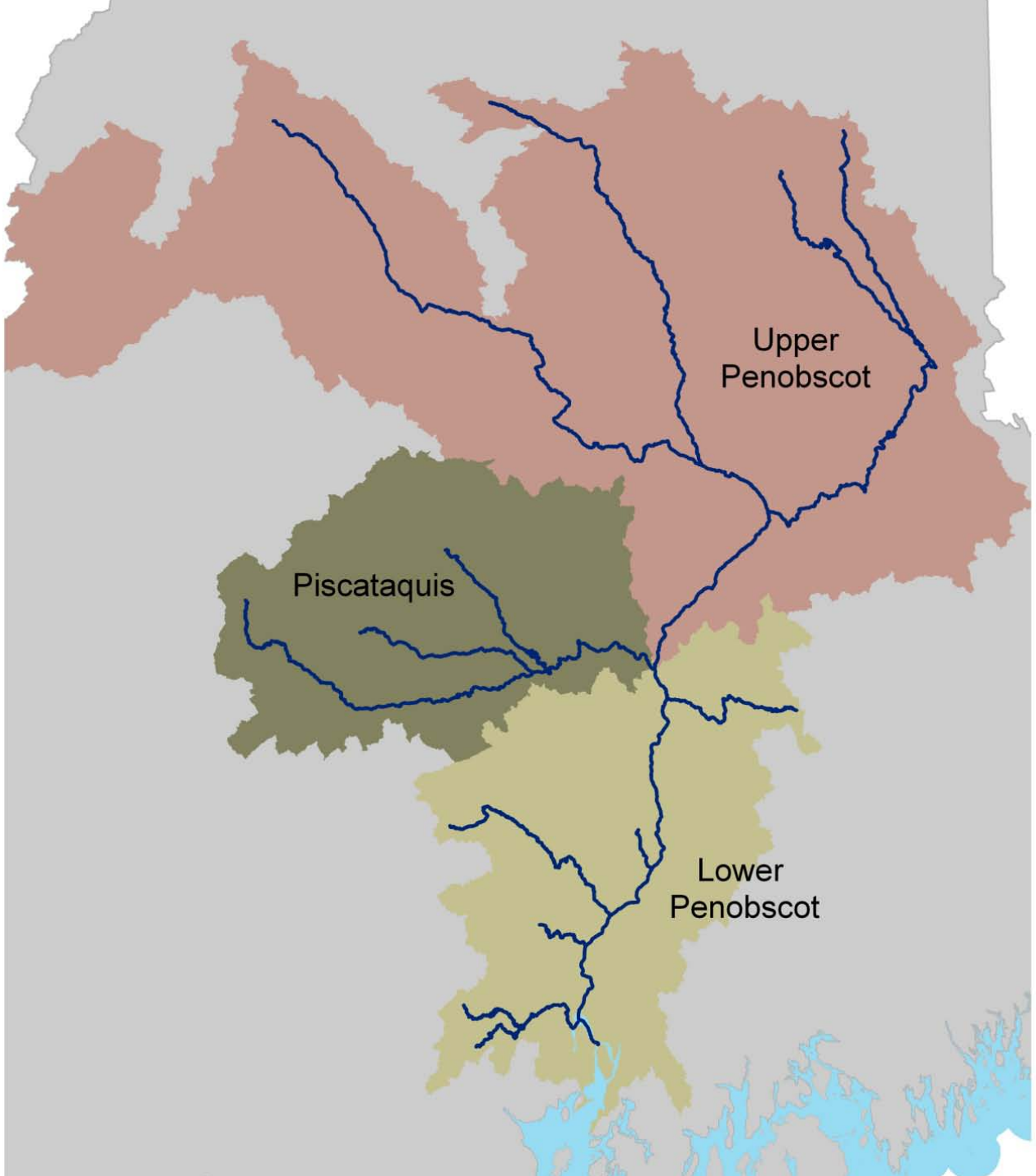
Results for Dam Scenarios

- Evaluate the impacts of dams.
- Scenarios
 - All dams on.
 - All dams off.
 - Mainstem dams on and tributary dams off.
 - Mainstem dams off and tributary dams on.
 - PRRP and SPP.

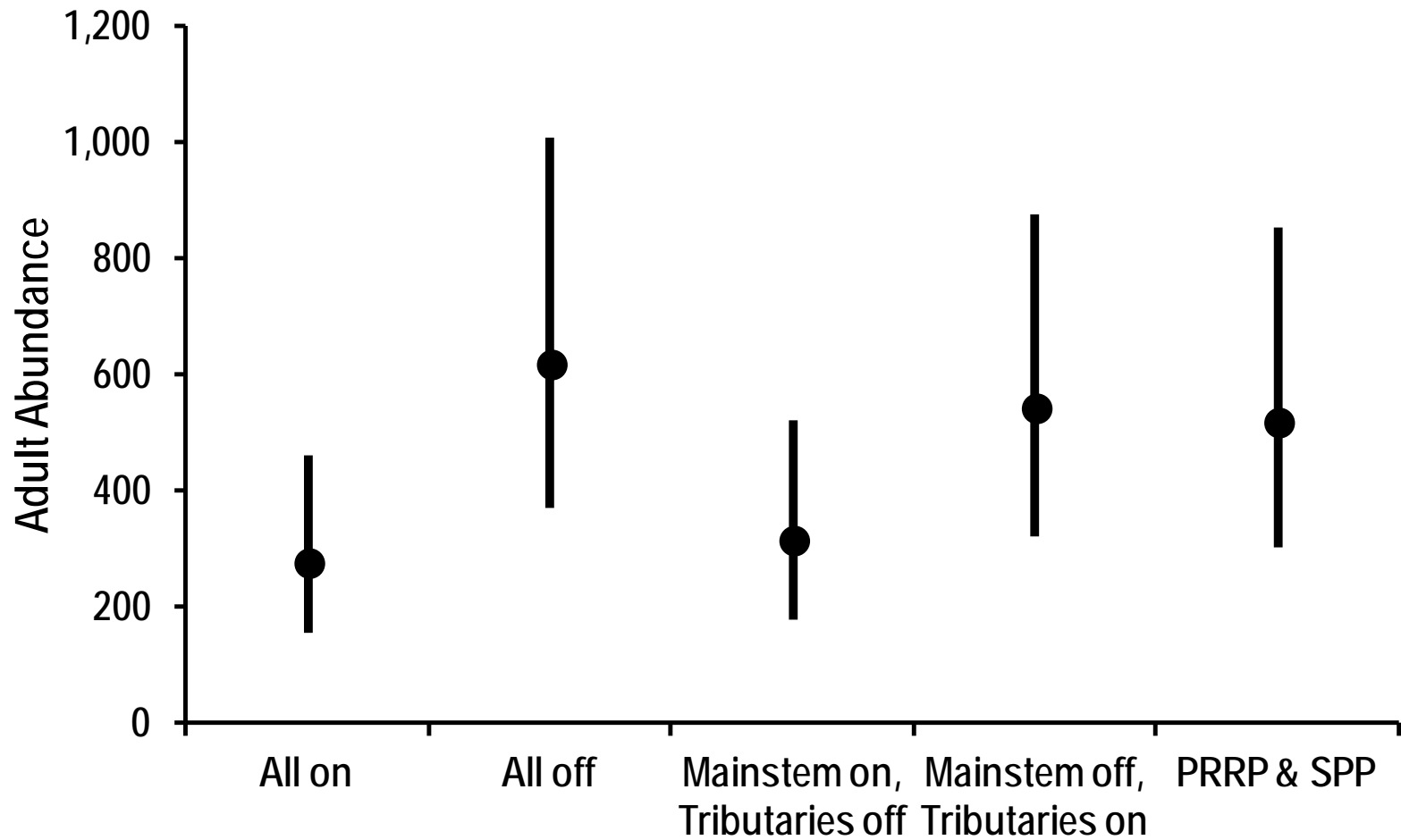
Results for Dam Scenarios

- Performance metrics:
 - Adult abundance.
 - Adult distribution.

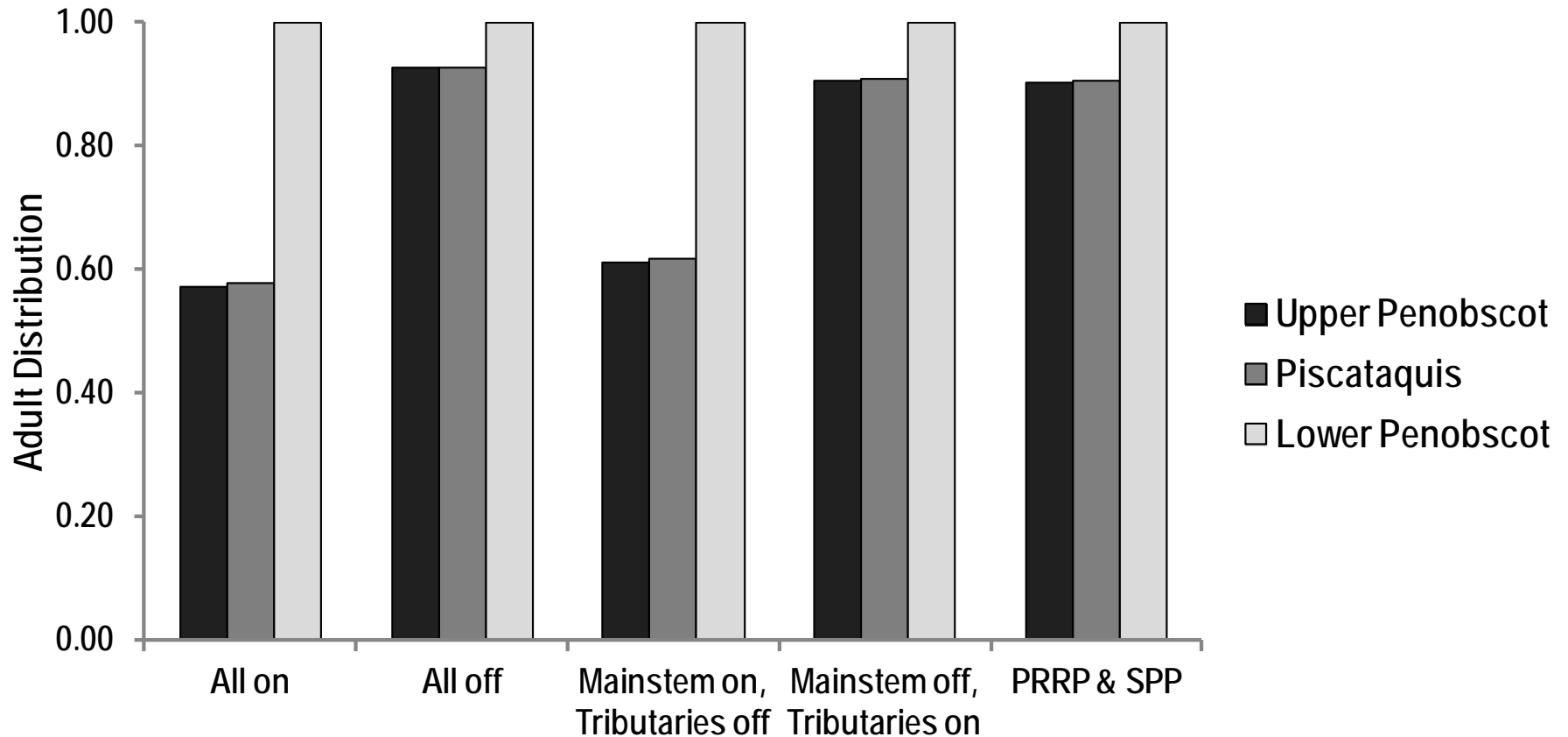




Results – Adult Abundance



Results – Adult Distribution

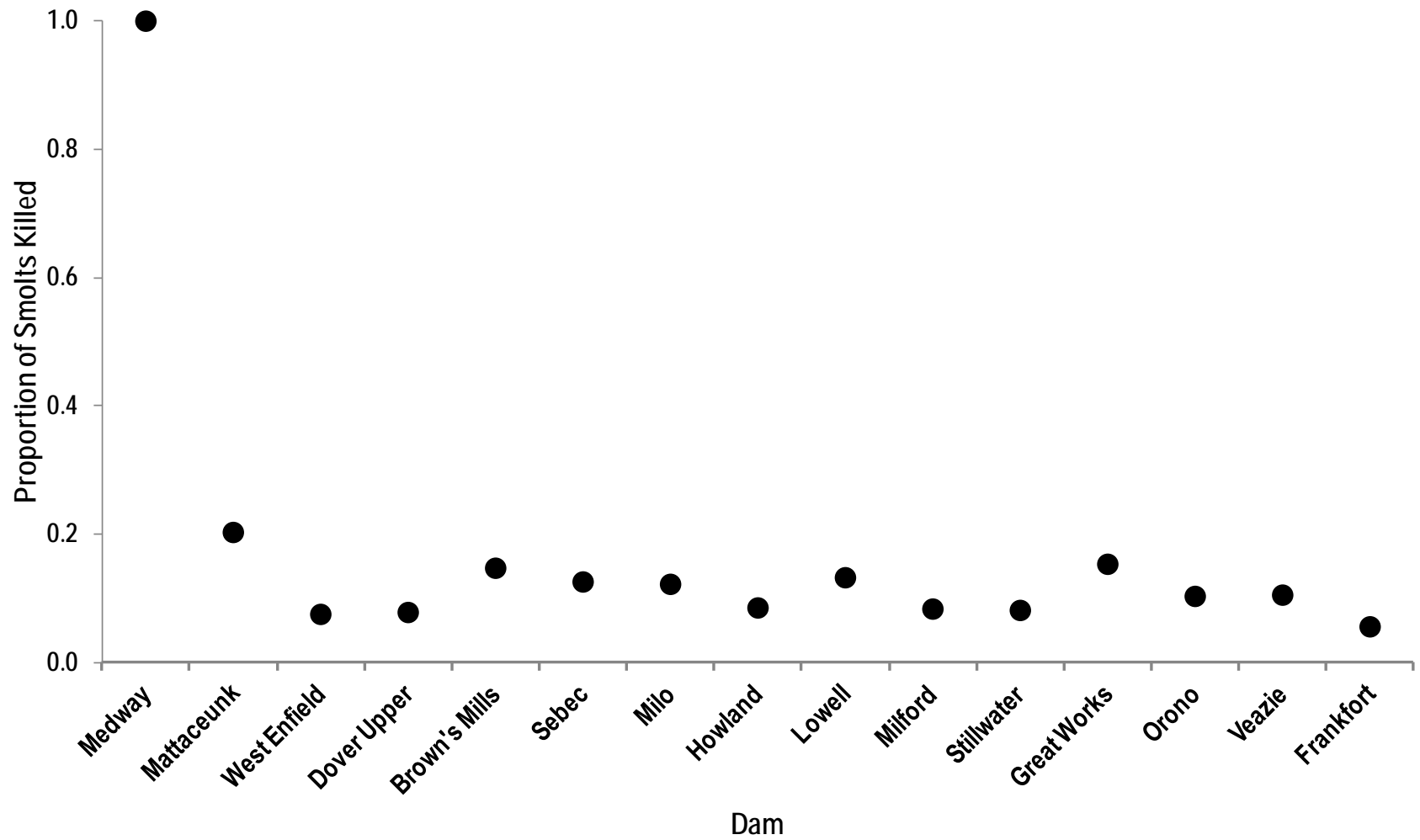


What Does This Mean?

- Leaving all of the dams in means abundance and distribution will be low.
- Mainstem dams vs. tributary dams: mainstem wins.
- Implementation of the PRRP and SPP will be good for Atlantic salmon.
 - Removal of one of the mainstem dams has been completed.

What is Next?

- Explore possible management actions:
 - Number and location of stocked fish.
- Explore environmental scenarios:
 - Increases in marine or freshwater survival rates.
- Explore possible regulatory actions:
 - Increasing downstream or upstream passage efficiency.
 - Dam removal.
- Help prioritize restoration actions.



Acknowledgments



Upstream Passage Expert Panel



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Northeast Fisheries Science Center
Northeast Regional Office
Restoration Center