

Measuring Pre-dam Removal Marine-Freshwater Linkages Between River & Bay Using Stable Isotopes

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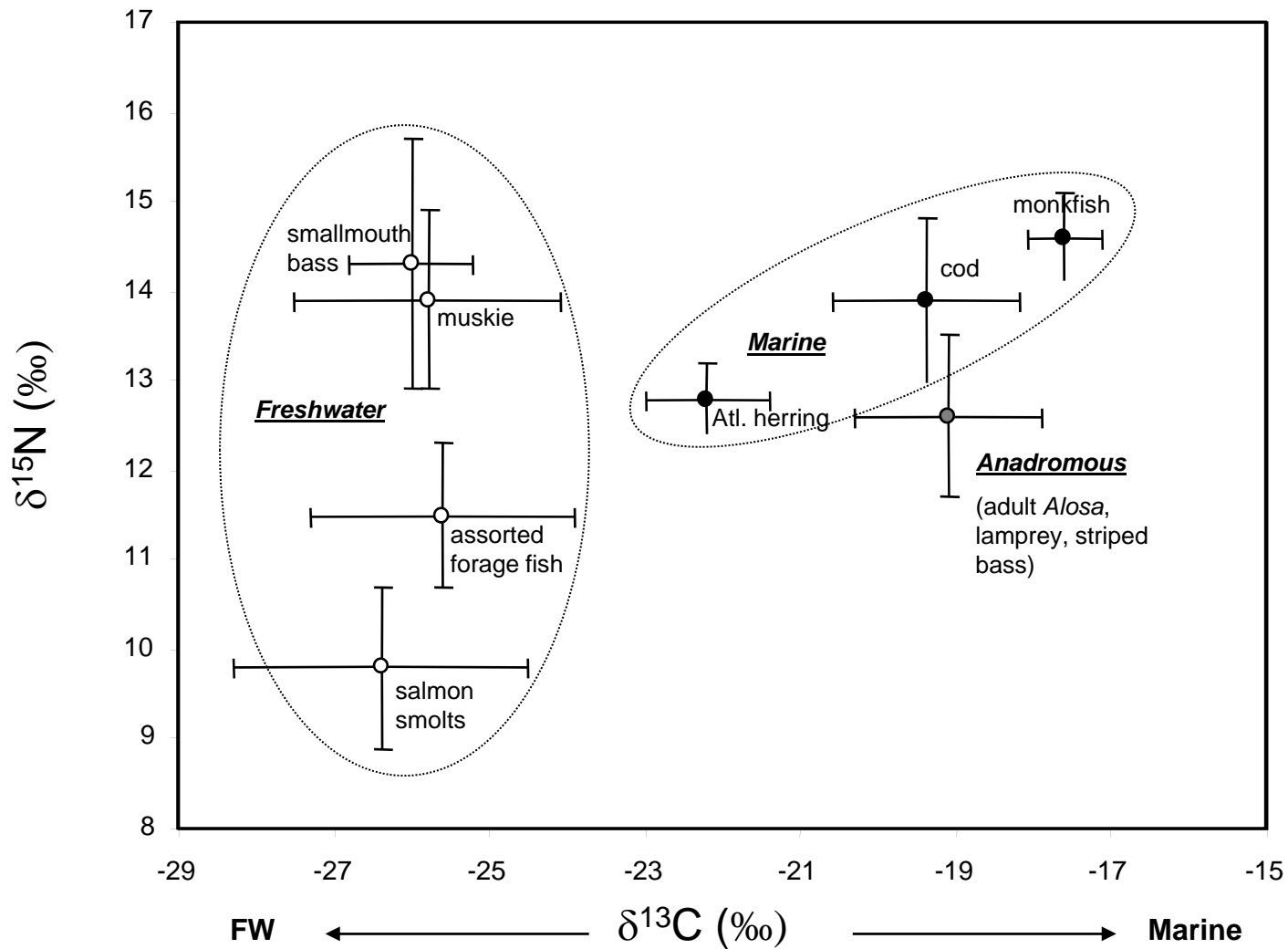
Post-dam removal expectations

Transfer from River → Bay should result in shift in $\delta^{13}\text{C}$ of marine predators towards more freshwater (less enriched) signature

- **juvenile production**

Transfer from Bay → River should, at a minimum, result in enrichment of $\delta^{15}\text{N}$ in freshwater predators & additional changes in food web structure from new species in the system

- **adult returns**



Freshwater & adult anadromous data from St. John River, NB (Curry et al. 2007)
 Marine data from Gulf of Maine (Sherwood & Grabowski, unpublished)

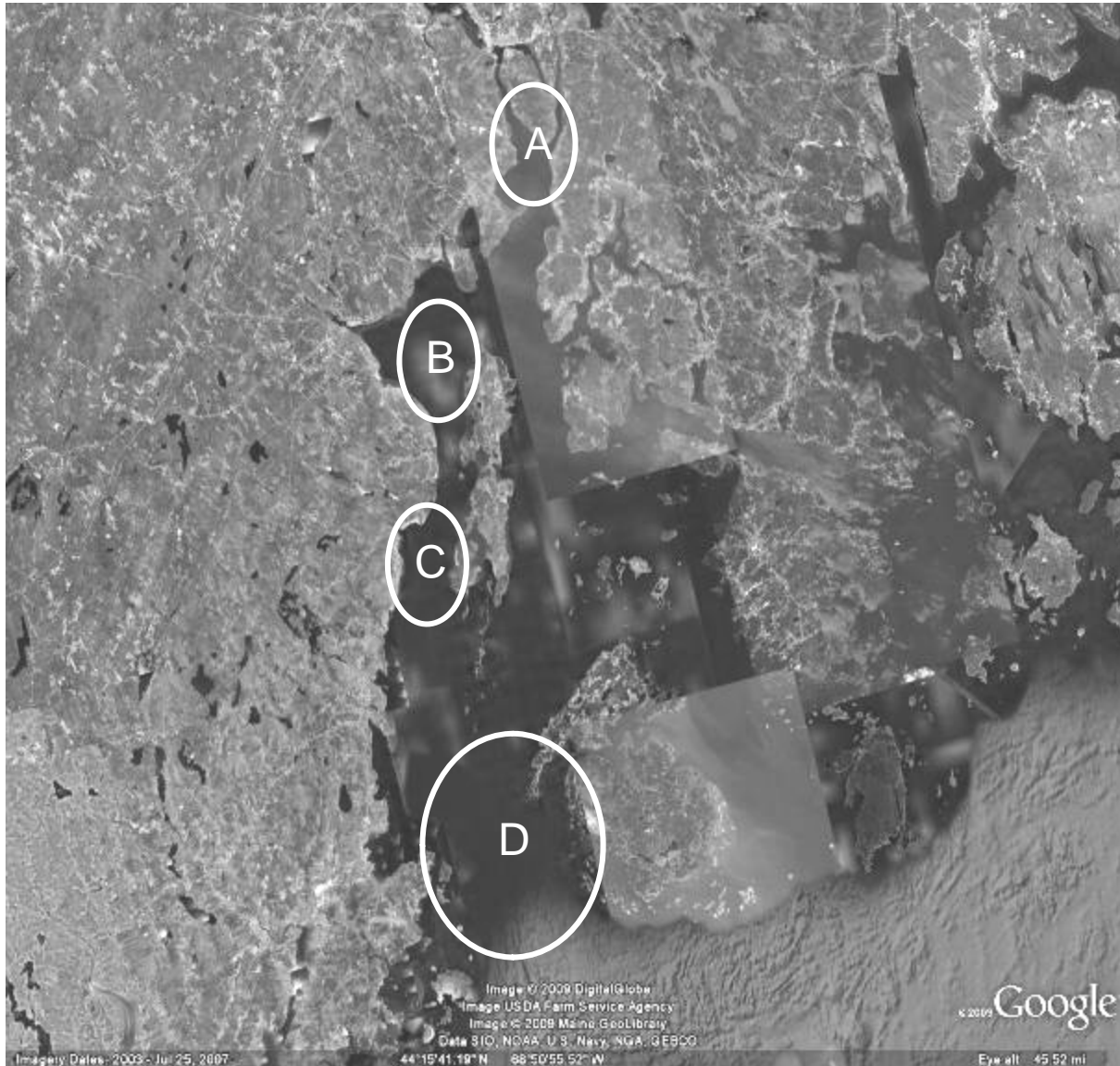
Target species

Food web component	Freshwater	Marine
Target forage	River herring	Atlantic herring
Target top predators	Smallmouth bass	Cod
Primary consumers	Snails, mussels	Urchins, tunicates
Secondary benthic consumer	Insect larvae, white suckers	Crabs
Small forage fish	Fallfish, golden shiners	Sand lance
Other large predators	Chain pickerel, eel, striped bass	Haddock, striped bass

Freshwater Sites (2009)

Sites	Spring	Fall
Below Veazie Dam (several sites)	X	X
Veazie Dam Impoundment / GW Dam tailrace	X	No
Great Works Impoundment / Milford Dam tailrace	X	X
Pushaw Stream	X	X
Piscataquis River	X	X
Passadumkeag River	X	No
Blackman Stream	X	No
Sunkhaze Stream	X	No

Marine Sites (2009)



A – Verona Island

B – Belfast Bay

C – Camden

D – Vinalhaven

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Imagery Dates: 2003 - Jul 25, 2007

44°15'41.19" N 68°50'55.52" W

Eye alt: 45.52 mi