

A composite image featuring a man in a boat handling a large net full of fish in the upper portion, and a large school of fish swimming in clear water in the lower portion. The text is overlaid on the upper portion.

**Restoration and recovery of the
St. Croix River Alewife: “the
good of the many outweighing
the good of the one”**

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Punch Line: The St. Croix is becoming what it once was....

- April 10, 2013:

- Maine Legislature Sends Alewife Bill to Governor:
Bangor Daily News

The House voted 123-24 and the Senate voted 33-0 to pass the bill, which would require state officials to remove barriers in fishways at Grand Falls Dam by May 1, in time to allow sea-run alewives to migrate upriver. It would be the first time since 1995 that the fish would have full access to the St. Croix watershed.

- 2016 St. Croix Guided Canoe TripAdvisor reviews:

- The route was beautiful and we saw several bald eagles (and a nest!!) a beaver and river otter. Lots of fun little and not so little rapids to keep the days interesting.
- Had an amazing time on the St. Croix with Dave and Tami! Excellent guides that helped us navigate some small to medium rapids. Beautiful trip in a **pristine** piece of Maine.

Where the St. Croix is headed....



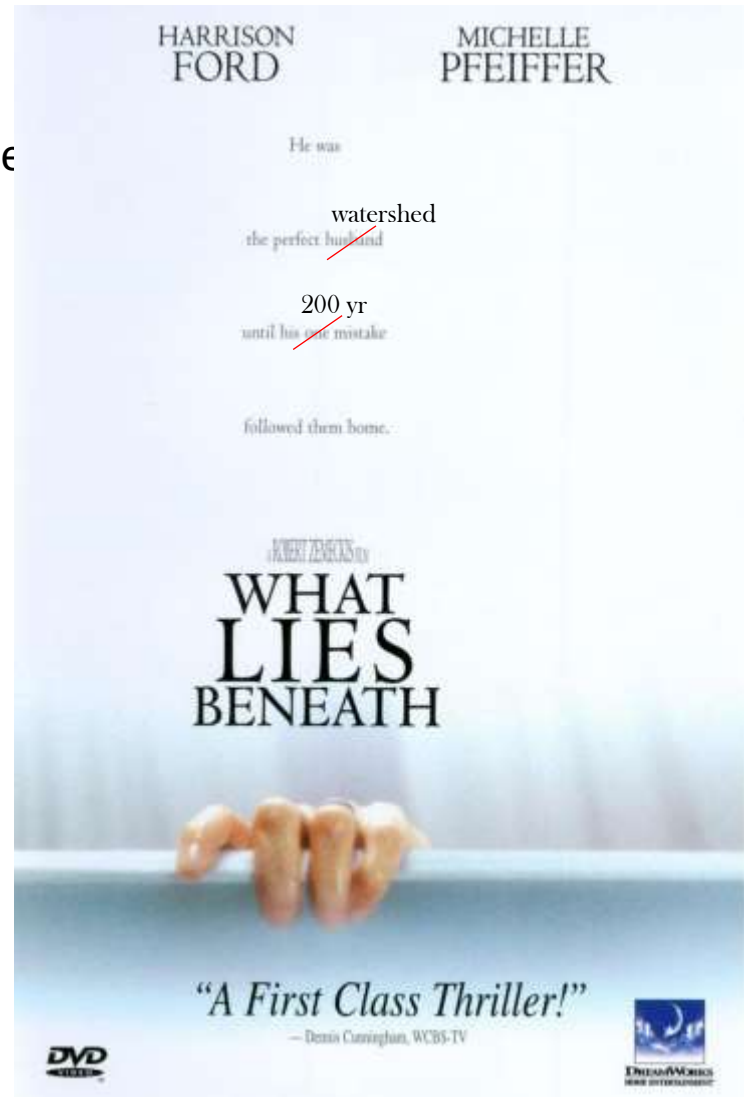
Location, location, location!

St. Croix River Watershed Major Impoundments

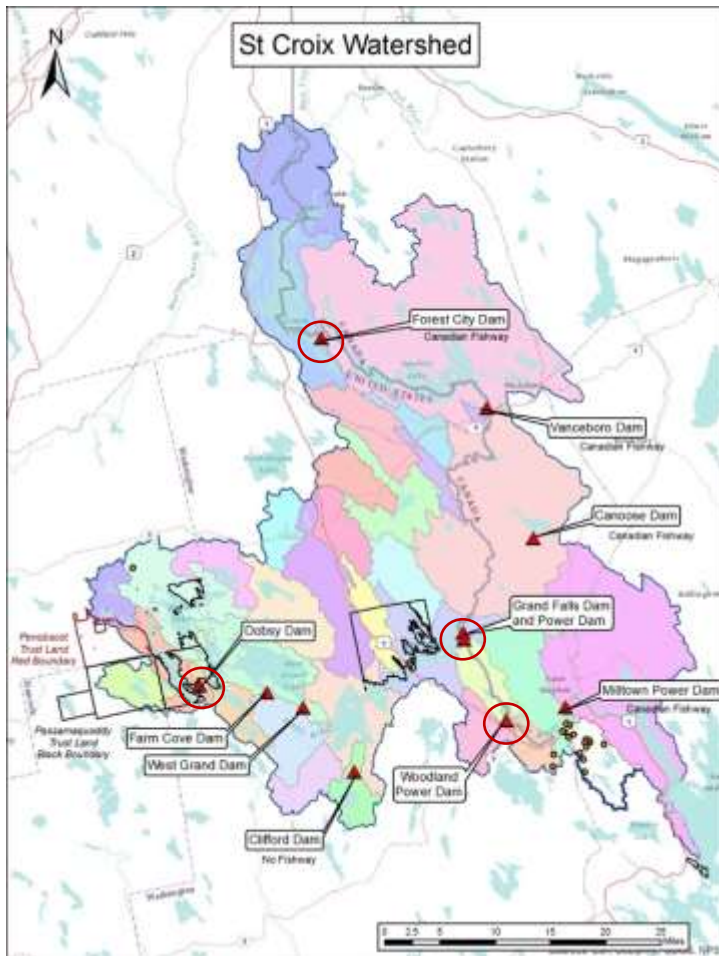


Class A water

Class C waters



What's happening in the St. Croix



- Alewife are no longer impeded at any dams in the watershed, except Grand Lake Stream
- Fishways are between 35 and 60 years old and badly in need of upgrade or repair
 - Woodland = 5 yr life span
 - Grand Falls = 10 yr life span
 - Milltown = stable but at unknown passage efficiency
- Dobsy and Forest City Dams being surrendered by Woodland Pulp and Paper
 - Other dams in tributaries are of questionable value
 - WPP just invested millions in a new tissue machine
 - International owners

What's in the past....



- 1784: First rudimentary saw mill in Canada at St. Stephen
- 1825: Abner Hill dammed saltwater falls
 - Did not provide fish passage as directed by the Crown's grant
- 1834: Four Dams on St. Croix within the limits of Calais
 - Panic of 1837 ended 50 years of growth
- 1850: Ten companies in Calais sawed 17.6M board feet annually
 - Six feet of sawdust in the tidal estuary



A “pristine” cut-over jumble



- 1809: The new surveyor for the King’s Wood of Charlotte Co., NB
 - “For a number of years past inhabitants of this county have cut timber of any size without any check whenever it suited their convenience.”
- 1819: From head tide extending several miles upriver there were 47 saw mills in the watershed
- 1821: Forest fires were a constant danger, particularly during drought, as they were often fed by lumberman slash
- 1829: The river and tributaries were a giant sluiceway, moving wood from as far north as Vanceboro

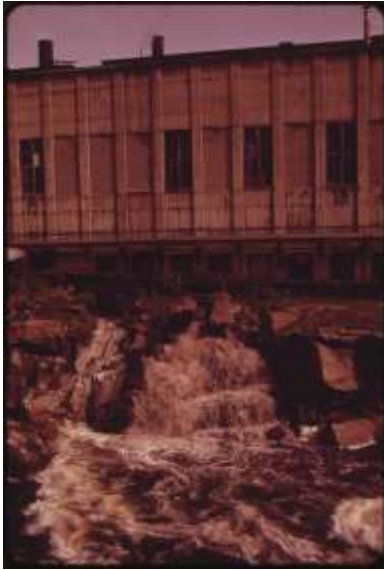


Fishing effort and dams...



- 1821: William Vance of Plantation No. 6 - inhabitants along the river had suffered immensely from the overfishing
- 1832: fish were "being mostly destroyed and stopped from passing up this river to the Lakes to spawn, by the great number of seines and trap weirs, and other impediments in said river"
- 1836: Town of Baring – [compel] the owners of mills on said river to build suitable fishways... and also regulating the times and days of taking said fish, and requiring the fishways to be kept always open and the wears [sic] to be kept shut two days in each week [sic], from the first day in April, to the first day in September, in each year, and prohibiting all persons from taking said fish on said days

What's in the past.... Doesn't stay there.



- 1905: Woodland Dam built with intermittent fish passage
- 1912: Grand Falls Dam built with no fish passage
- 1965: Kraft operation
 - Wood sludge from paper mills and shoals of sawdust from saw mills smothered most life on the bottom of the Presumpscot, Kennebec, Penobscot, and St. Croix Estuaries before the 1970s.



Some fishy success...



- Late 1960s: Modern fishways built at all three lower dams
- 1973: Clean Water Act begins to be enforced
- 1980s:
 - Alewife stocked and fish passage improved to restart population
 - Salmon raised and stocked to restart population
 - No response from salmon, good response from alewife



Industrial Waste Legacy

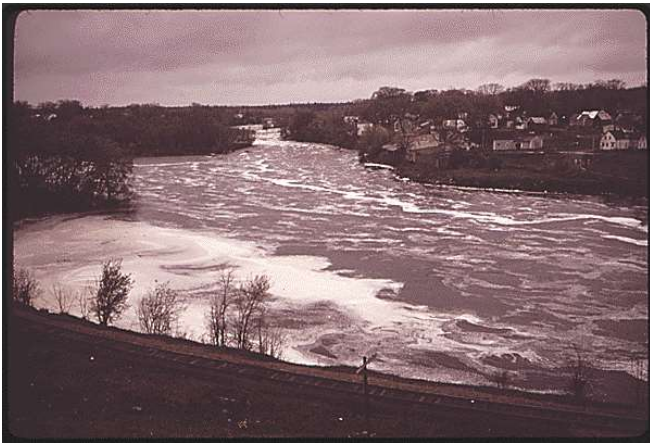


Public Interest Research Group, 2000

- The St. Croix River, which runs between New Brunswick and Maine, has the 11th highest persistent toxic levels.

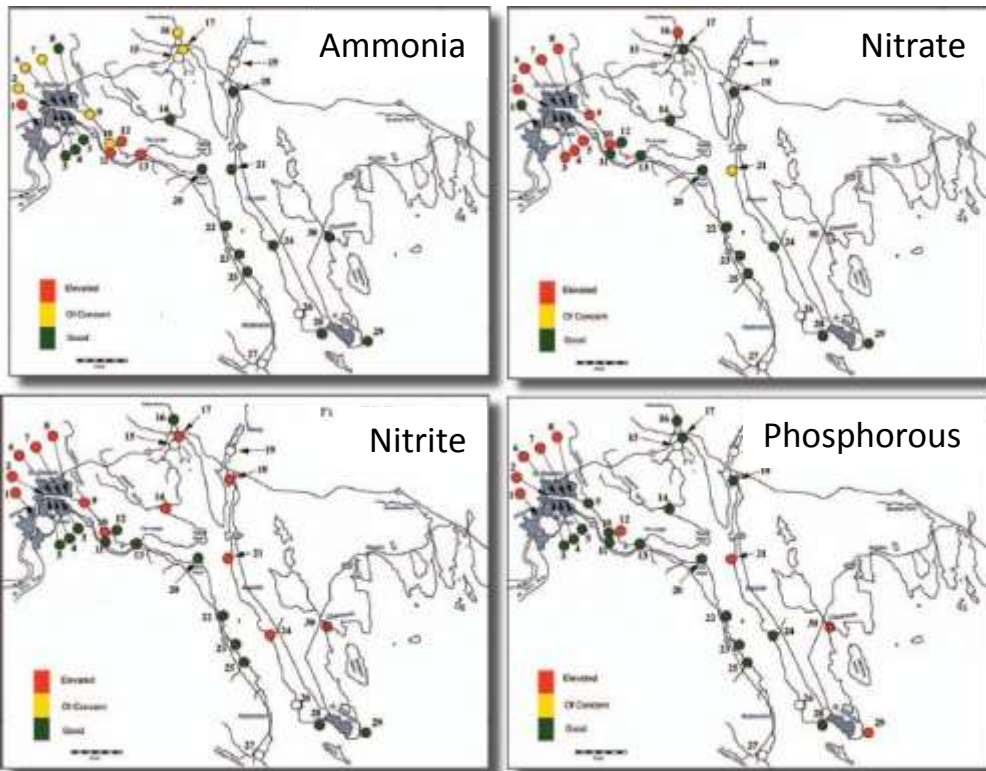
St. Croix Estuary Project Inc. (MacKay et al. 2003)

- Migratory fish disappeared
- Salmon parr lasted 15 hrs in 56% effluent
- Upper estuary mud flats anoxic without plants or animals
- Commercial eel fishery ended
- Fisheries in the estuary and Western Passamaquoddy Bay ended
- Sediments in the estuary are a repository for a wide variety of chemicals, many of known toxicity
- Work done in 2001 suggests that **surface** sediments have seen marked improvement



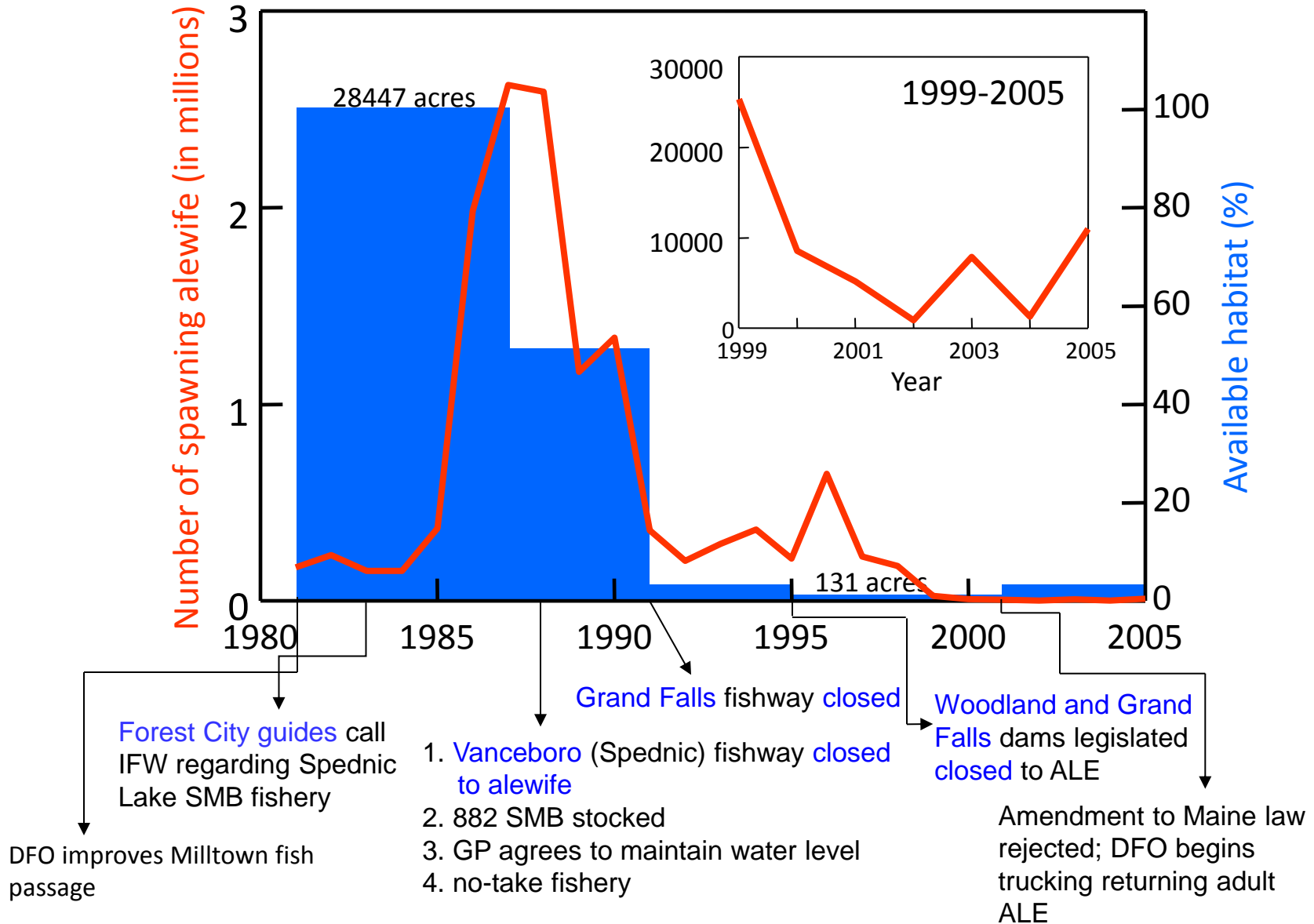
Human Waste Legacy

2002



- Combined Sewage Overflows still contribute to clam flat closures and *Enteromorpha* growth that creates anoxic muds

St. Croix River alewife story



Grinding Restoration to a Halt

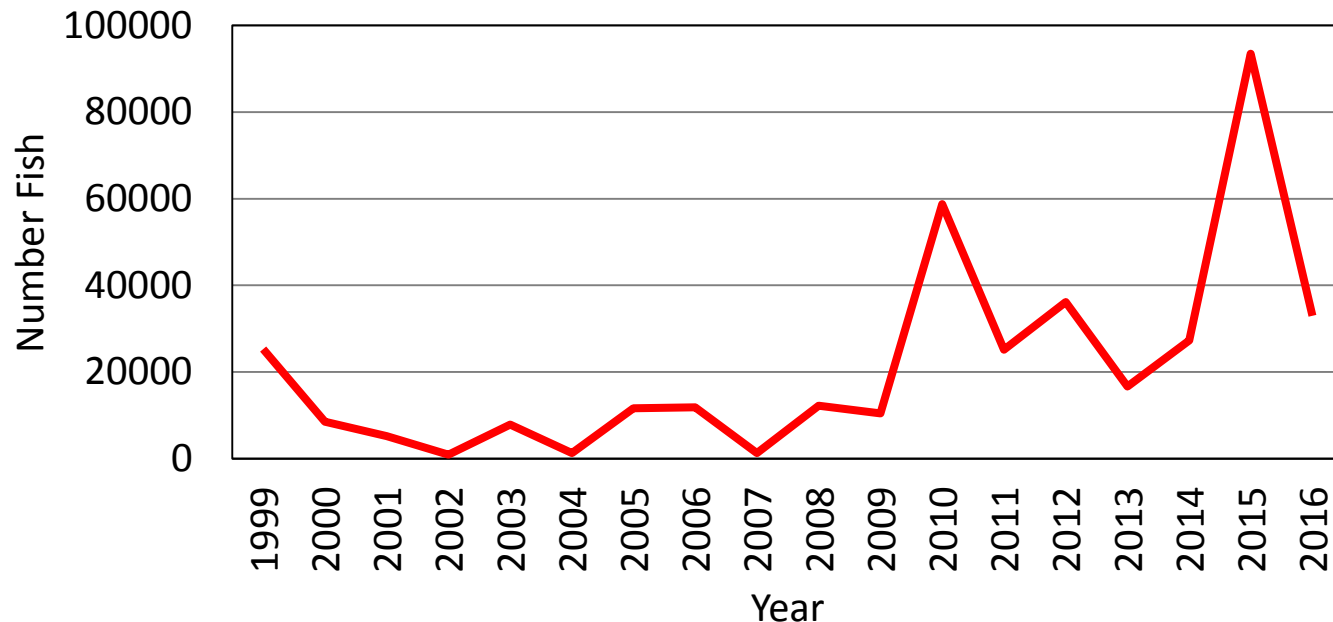
“By May 1, 1995, the commissioner and the Commissioner of Inland Fisheries and Wildlife shall ensure that fishways on the Woodland Dam and the Grand Falls Dam, both located on the St. Croix River, are configured or operated in a manner that prevents the passage of alewives.”



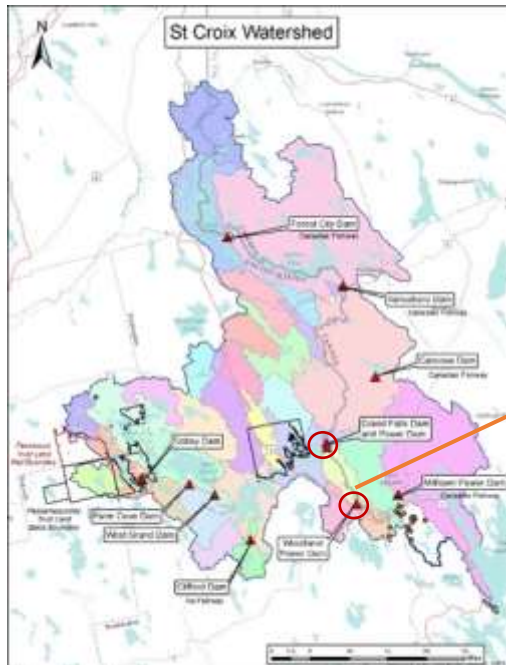
- The Bill, L.D. 520, was passed after its text was substantively revised, was procedurally revised to make it emergency legislation and was passed unanimously in both chambers.
- How did this happen?
 - Democratic Governor, closely divided Republican Senate and a split House
 - 75:75:1 house; 18:16:
 - Three attempts were required to repeal the law

Grinding Restoration to a Halt cont.

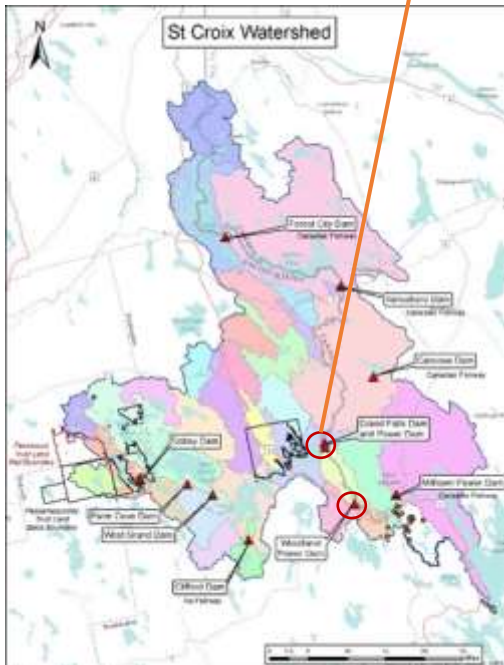
- L.D. 520 followed nine years of habitat closures to alewife - An adaptive management experiment
 - Clearly demonstrated that less habitat reduced the number of alewives
- Between 1987 and 2002 the population collapsed from 2.7M to 900 fish
- In 2015 over 90,000 alewife returned + the first shad since 1993



Woodland...



Grand Falls...



Where the St. Croix is headed....

