Building Fishways to Restore Diadromous Fishes to Connecticut

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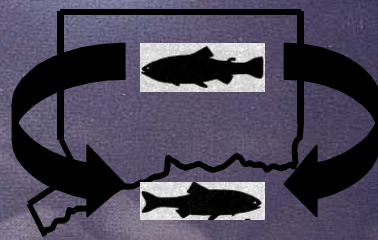
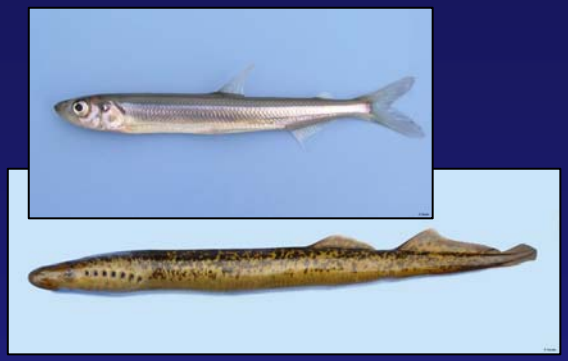




Diadromous?

Anadromous

- Matures in saltwater
- Spawns in freshwater

Catadromous

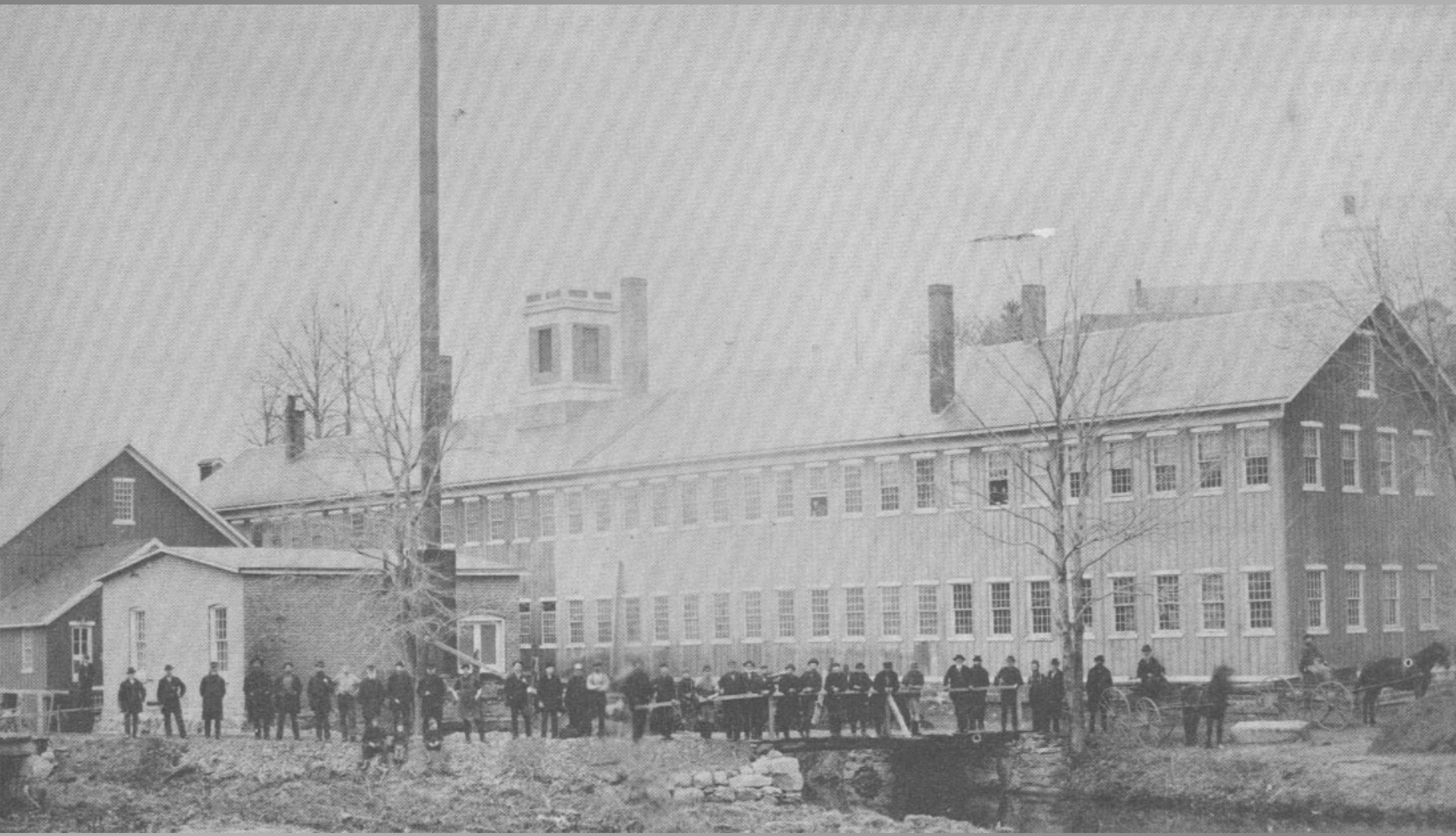
- Matures in freshwater
- Spawns in saltwater

Diadromous

Fish that migrate between fresh and salt water


DAMS !!

MILLS Each town had them and that meant dams



- **By mid 1700s small dams on tributaries (especially Southern New England) blocked fish access to upstream habitat - extirpated local runs**
- **~1740- salmon are gone from the Housatonic River.**
- **~1780- salmon are gone from all CT tribs of the CT River.**
- **1798 - 1st dam across the CT River in Turners Falls, MA.**
- **1799 - 1810 – Salmon "already in the system" continue to return**
- **~1811 - Connecticut River Atlantic salmon extinct**
- **1830- first mainstem dam on the Shetucket River**
- **1845- Shetucket River Atlantic salmon extinct- shad reduced.**

The impacts of dams have not been limited to diadromous fish species

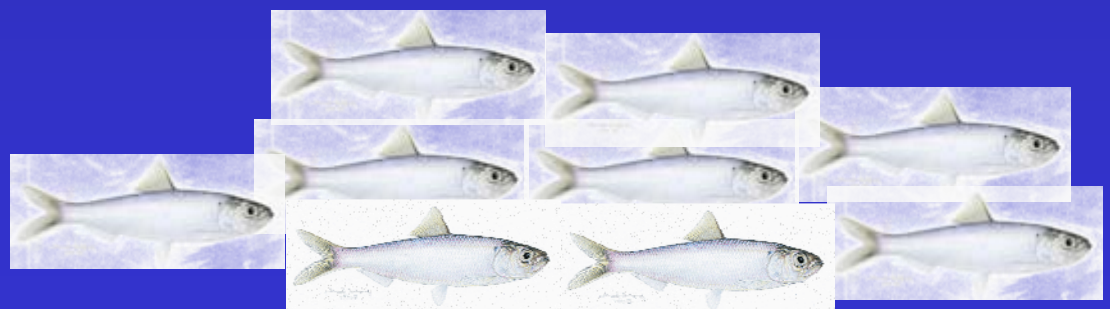
The impacts on these species have not been limited to just dams

WHY DO FISH NEED TO GO UPSTREAM?

Fish need adequate amounts of habitat to support their young.

Extension services say that horses need about 1.5 – 3 acres of pasture to be sustained.

Fish have such minimum habitat requirements, too. One acre of habitat may support 50 American shad or 1,000 alewives.



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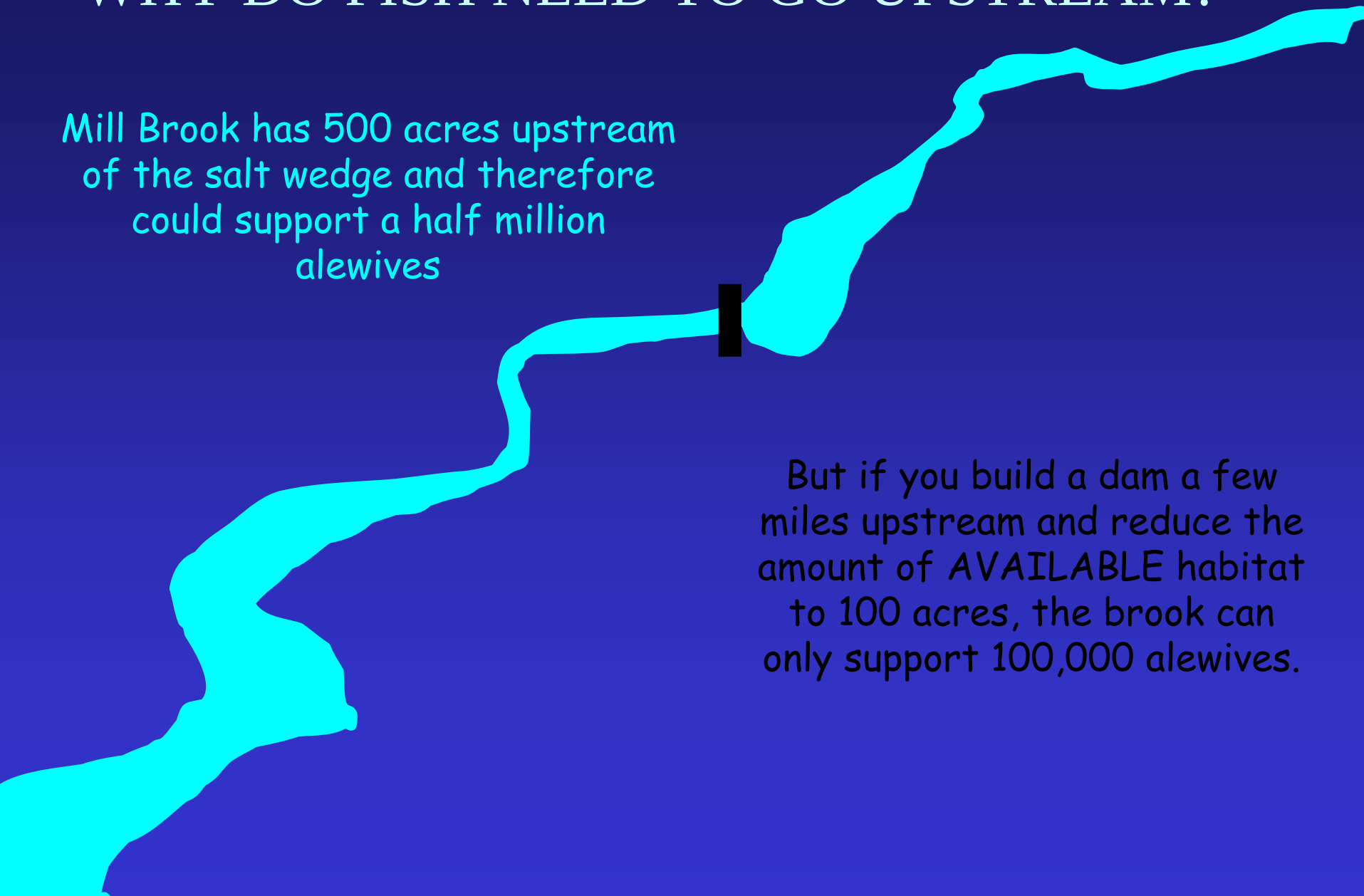
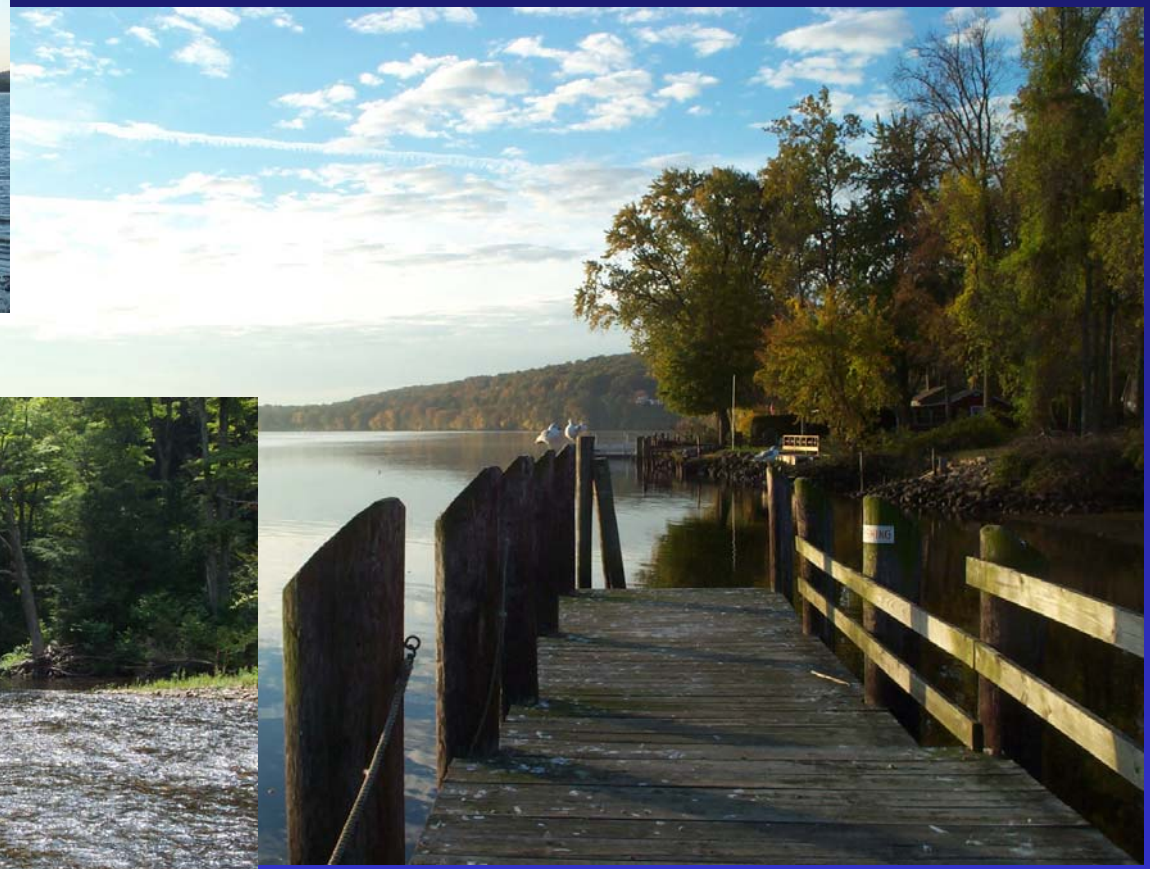


Mill Brook has 500 acres upstream of the salt wedge and therefore could support a half million alewives

But if you build a dam a few miles upstream and reduce the amount of AVAILABLE habitat to 100 acres, the brook can only support 100,000 alewives.

It’s the habitat, stupid!



BLUEPRINT FOR RESTORING FISH RUNS

- ✓ Identify existing runs of fish
- ✓ Identify existing barriers to fish runs
- ✓ Identify suitable habitat upstream of barriers
- ✓ Identify potential restoration projects
- ✓ Reintroduce fish to system (if necessary)
- ✓ Provide fish passage at barriers

What Do We Restore?

Species that are valued by residents

Species for which suitable habitat remains

Atlantic salmon- Connecticut River basin only

American shad- Housatonic, Quinnipiac, Connecticut, Shetucket, Quinebaug rivers

River herring in dozens of streams, statewide

American eel- where surveys show dams have reduced upstream numbers

Other Species

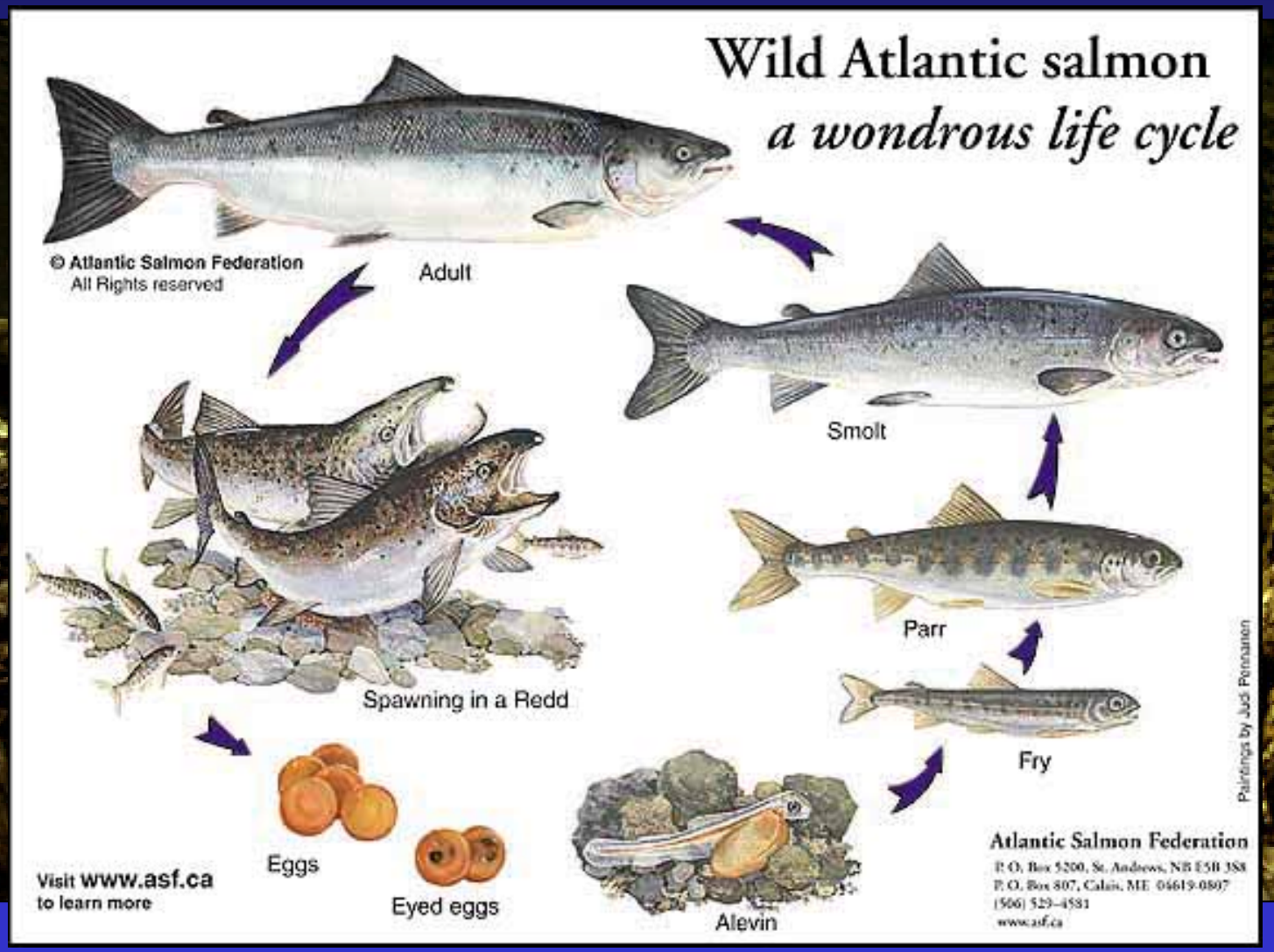

Sea-Run Brown Trout

Shortnose Sturgeon

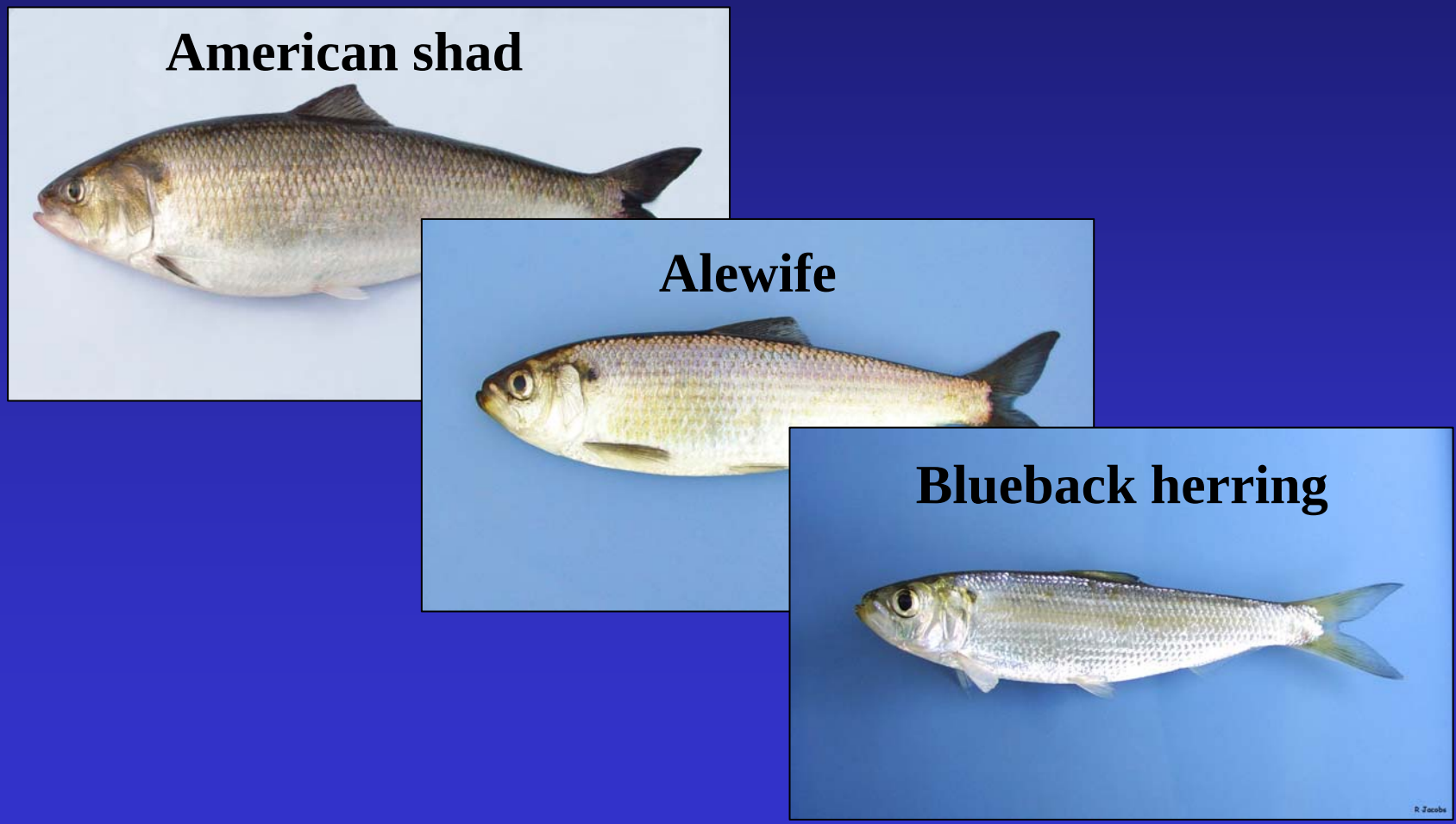
- striped bass
- gizzard shad
- hickory shad
- white perch
- rainbow smelt

Sea lamprey

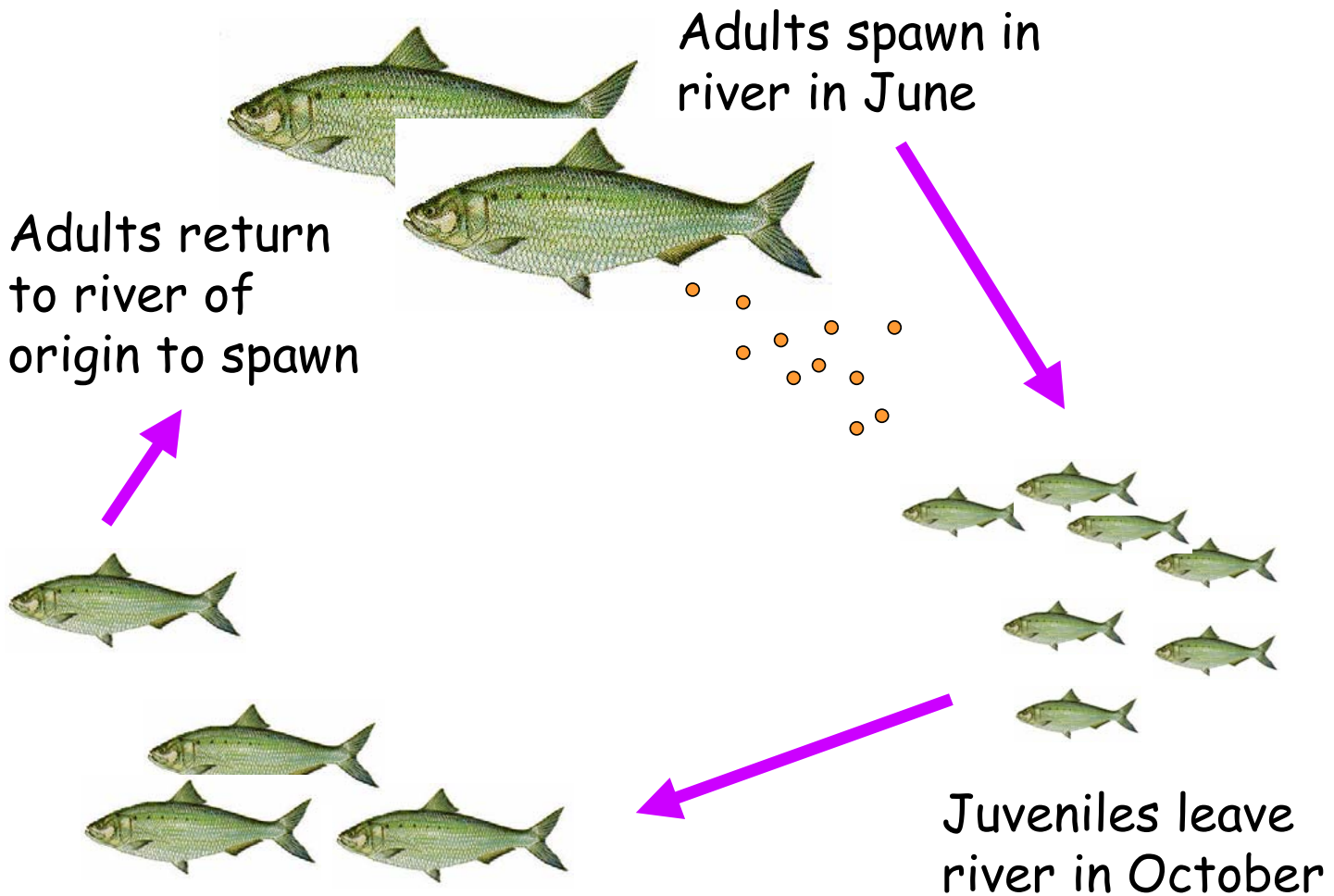
Atlantic salmon Life History



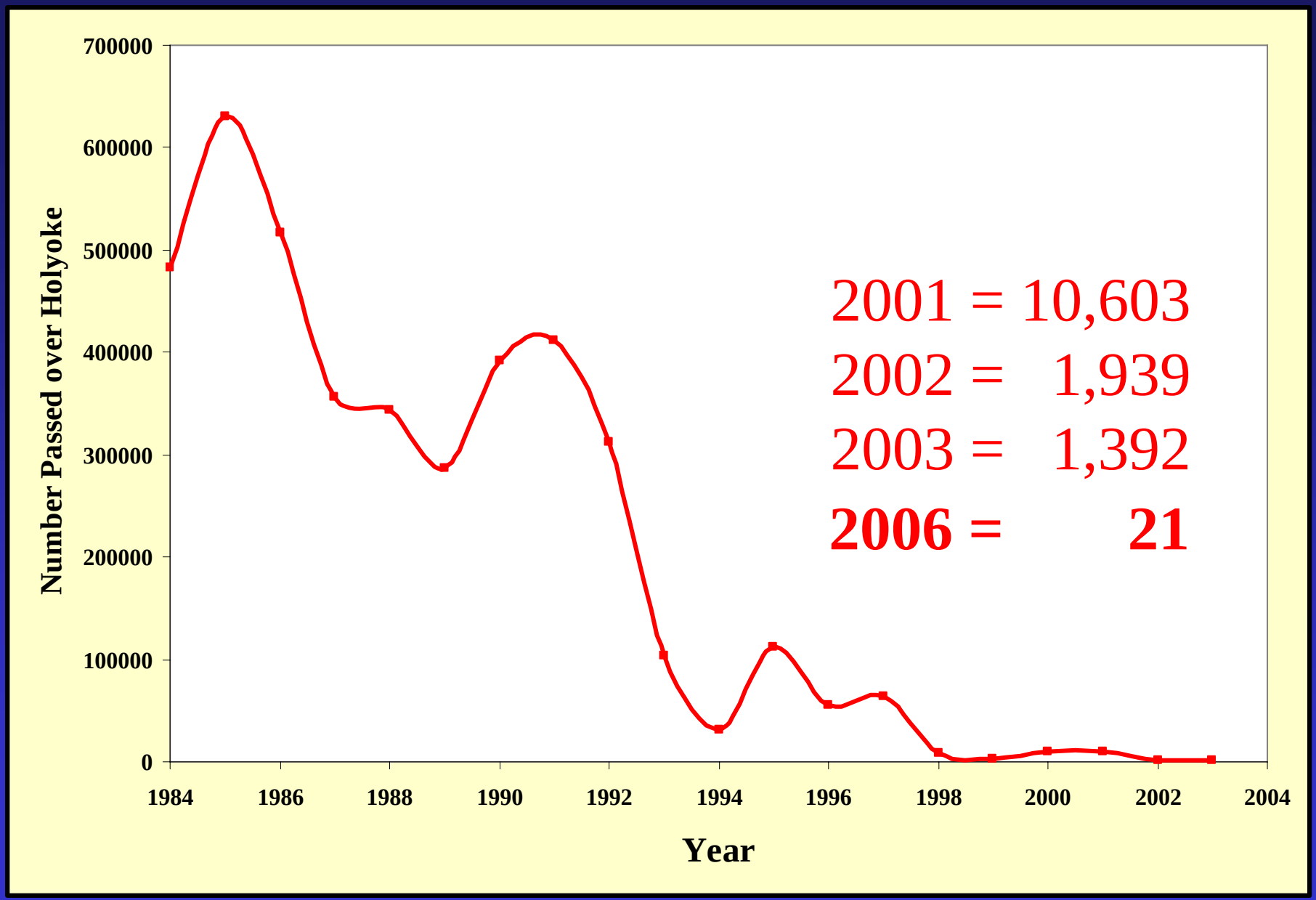
American shad, alewife, and blueback herring



Life History



Numbers of blueback herring passed at the Holyoke Fishlift



ATTENTION ANGLERS

The taking of Anadromous Alewife and Blueback Herring is Prohibited In All Connecticut Waters Until Further Notice

This action was taken to conserve declining populations of sea-run herring. This prohibition applies to ALL inland and marine waters of the State of Connecticut except that landlocked alewife may still be taken by angling or scoop net in the following lakes:

Amos Lake, Ball Pond, Beach Pond, Candlewood Lake, Crystal Lake, Highland Lake, Quassapaug Lake, Quonnipaug Lake, Rogers Lake, Squantz Pond, Uncas Lake, and Waramaug Lake.

To Report Fishing Violations
Phone (800) 842-4357

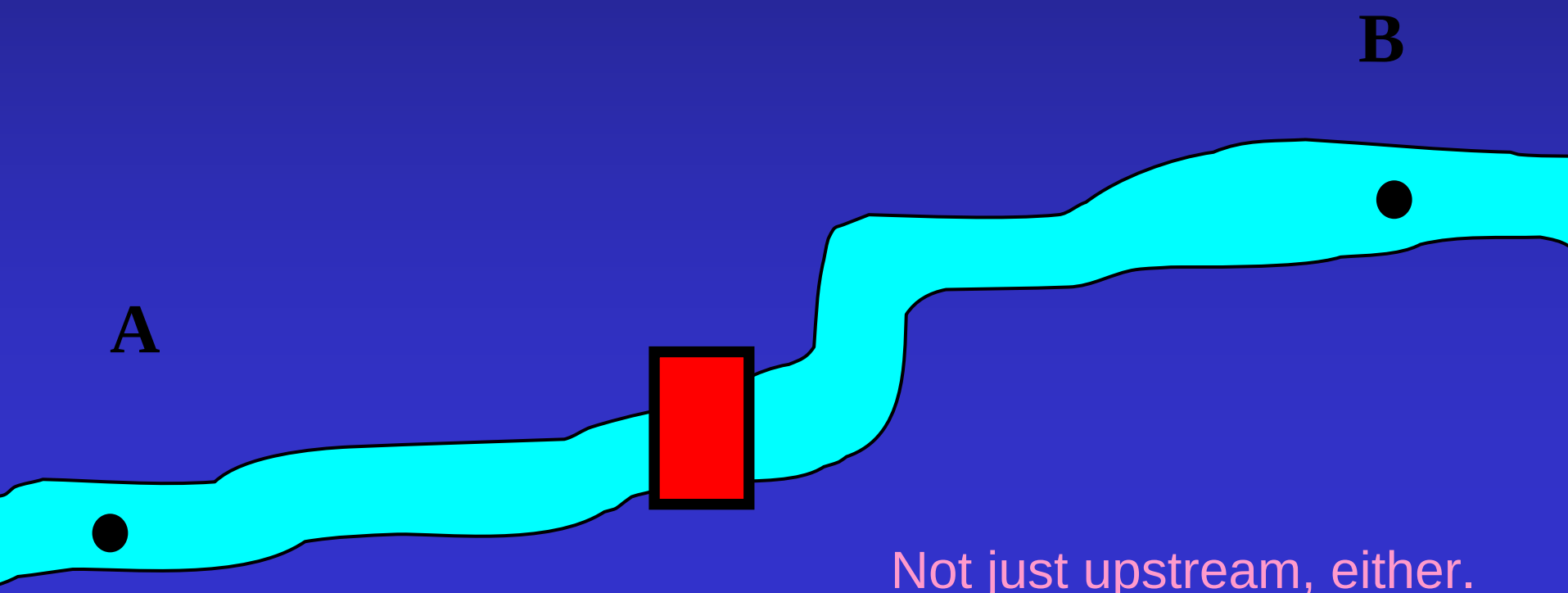
State of Connecticut
Department of Environmental Protection
Inland Fisheries Division
(860) 424-3474

11249-52903

VOSS SIGNS, LLC. MANLIUS, NY 13104-0553 1-800-473-0698 www.vosssigns.com

FISH PASSAGE

A project or activity that allows fish to get from point A to point B safely, typically where a human-made structure that inhibits fish movement is located between the two points and additional human intervention is required.



Not just upstream, either.

FISH PASSAGE

Typical options include:

- removal of the structure
- modification of the structure
- building of a fishway around the structure

Important Facts

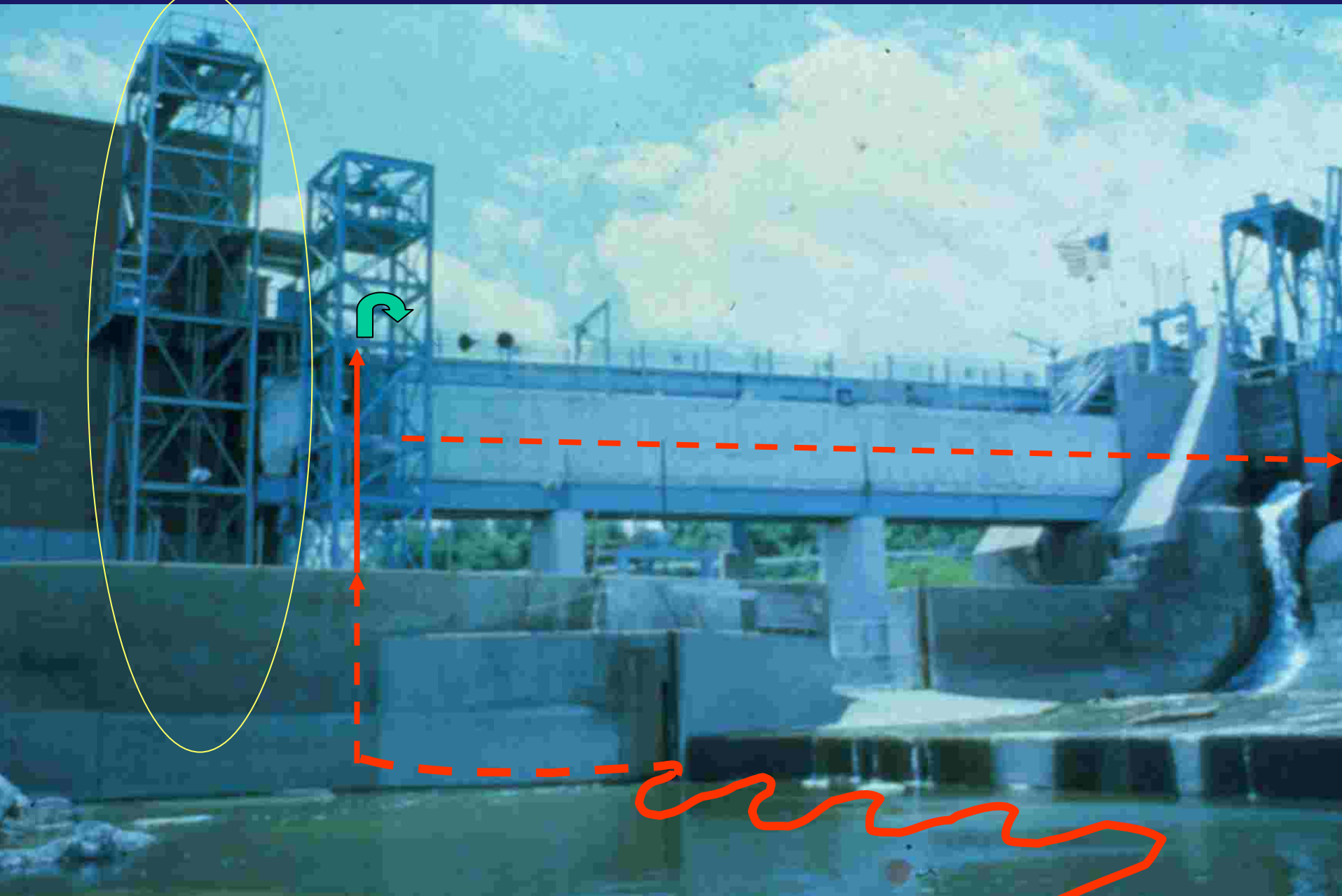
- swimming and leaping abilities vary greatly among fish species. Solutions have to be design to match these abilities.
- generally, the weaker swimming fish require more expensive fishways.
- due to limited space and money, most fishways do not pass all fish that arrive at the base of the dam. Typically, the strongest swimmers pass and the others stay behind.
- fishways need to be designed, operated and maintained.
- fishways pass fish but other impacts of the dam remain.

Dam Removal

Large fish and numerous fish in large rivers usually requires large fishways ($$$$)

- damowners who generate and sell electricity must be licensed and fishways are often a condition of that license.
- In CT, if owners of dams that are NOT licensed repair or modify their dam, they need a DEP permit. A fishway can be a condition of that permit.
- As the public learns more about fish restoration, more and more dam owners are seeking to build fishways at their dams *voluntarily*. These are generally smaller dams.

HOLYOKE FISHLIFT




YOU
ARE
HERE
Panasonic

Kinneytown Fishway- a "Denil"

River Herring- passage around dams

A “steeppass” fishway

Jordan Millpond

Fishing Brook

CLARK'S POND FISHWAY- A POOL & WEIR

CHALKER MILLPOND FISHWAY

SOME FISHWAYS CAN BE QUITE SMALL– BUT STILL IMPORTANT

LOWER GUILFORD LAKE NATURE-LIKE FISHWAY

A formerly impassable branch of a stream made passable by the construction of a 1 on 14 rocky ramp right in the stream.

NOD BROOK CULVERT FISHWAY

Off-set baffles installed within a box culvert

If you're building a fishway, what else can you do besides passing fish upstream?

- viewing window
- count fish
- identify fish
- trap fish
- educate the public

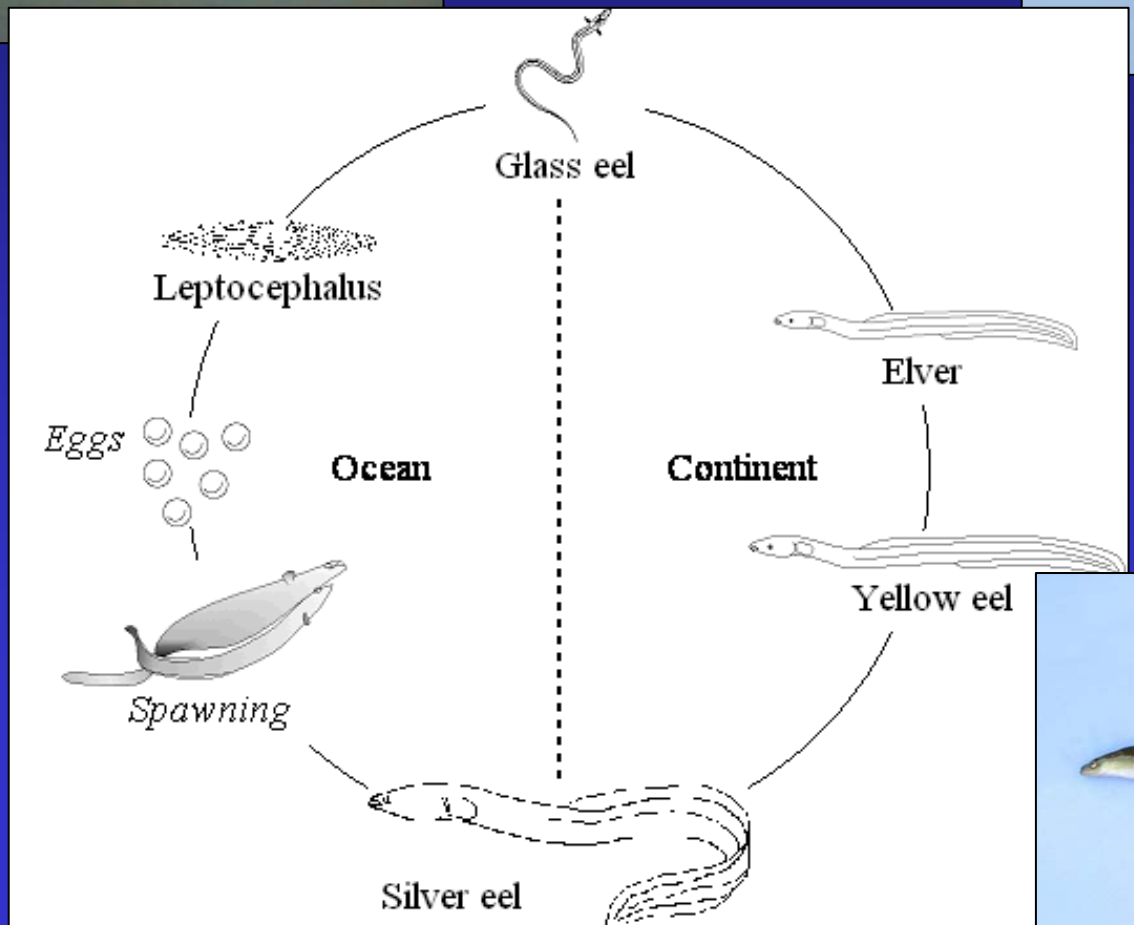
River Herring- electronic fish counter

LATIMER BROOK FISHWAY TRAP

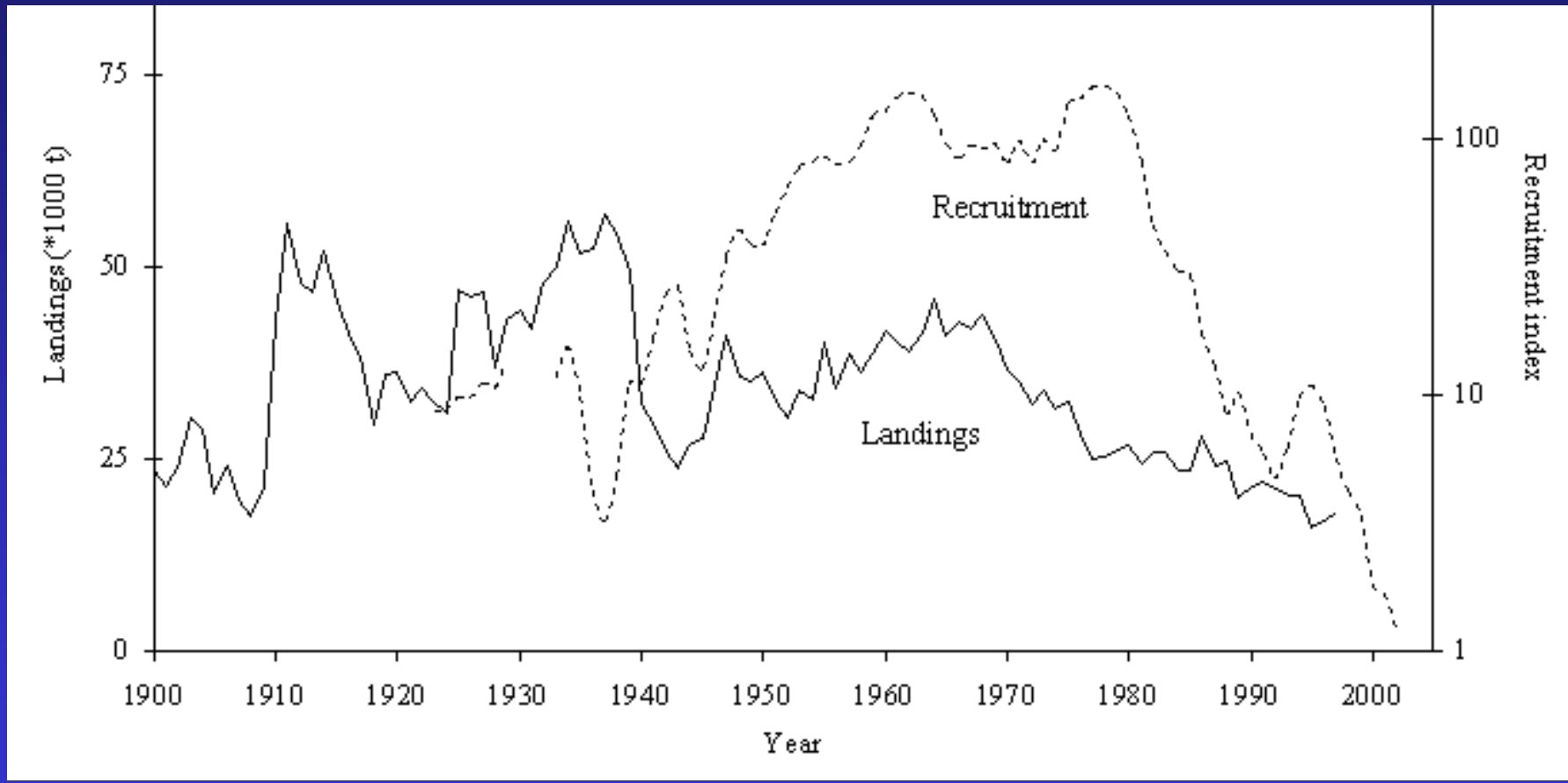
American eel

- Catadromous
- Spawns at depth in Sargasso Sea and dies
- Juveniles remain in larval stage for one year, riding the Gulf Stream
- As larvae near coast, transform into glass eels (2 - 4”)
- Arrives in freshwater beginning late winter - ?
- Males seem to stay in lower rivers & estuaries
- Females head upstream
- Develop into elvers (6 - 10”)
- “Highly motivated migrants” - able to climb low-head barriers
- Remains in freshwater as yellow eels for many years (10+)
- Mature into silver eels late summer - early fall
- Migrate back to sea during fall high water events

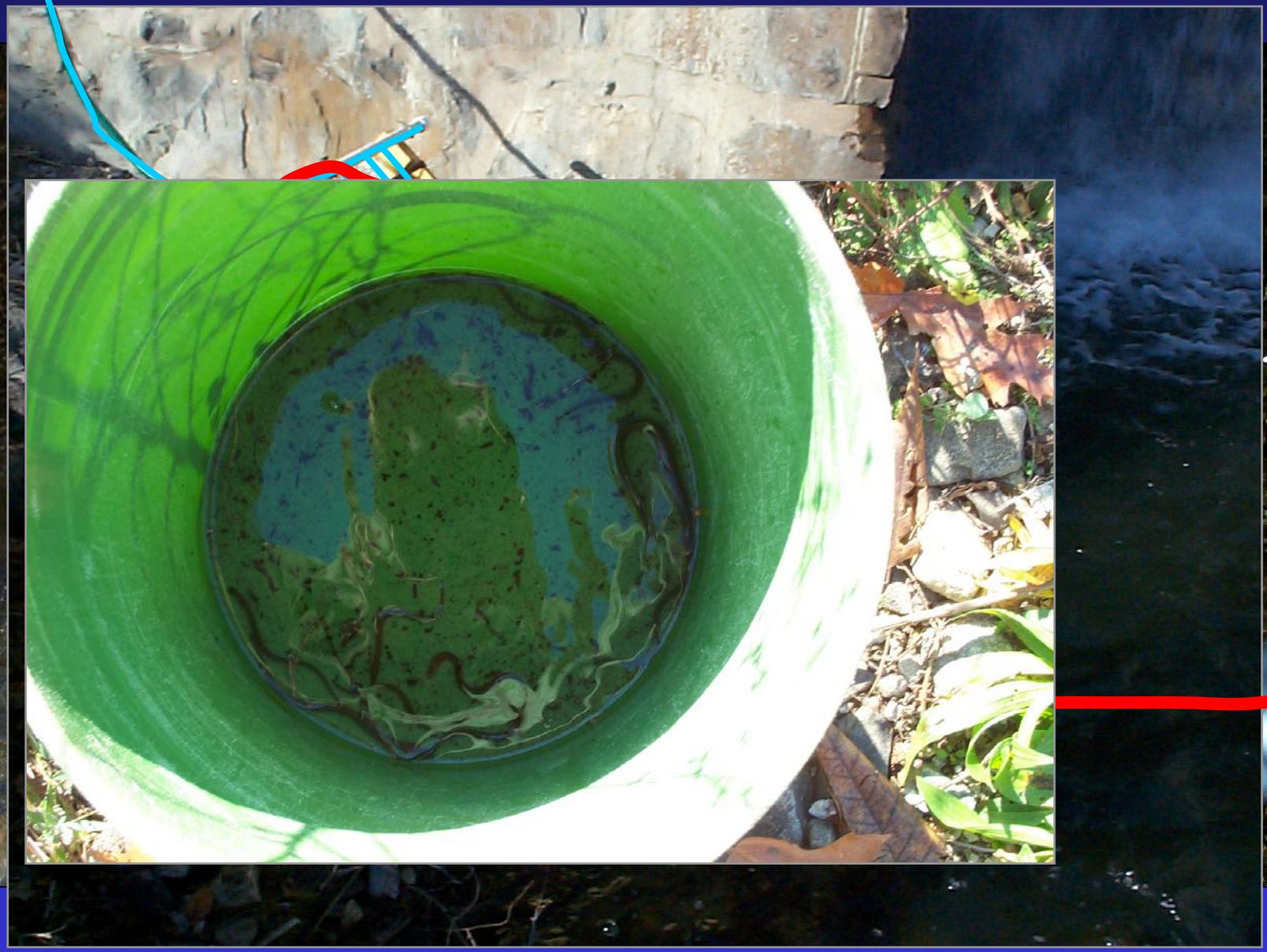
American eel



American eel



Getting eels over barriers…



Eel pass

Cooperative Fish Passage Projects

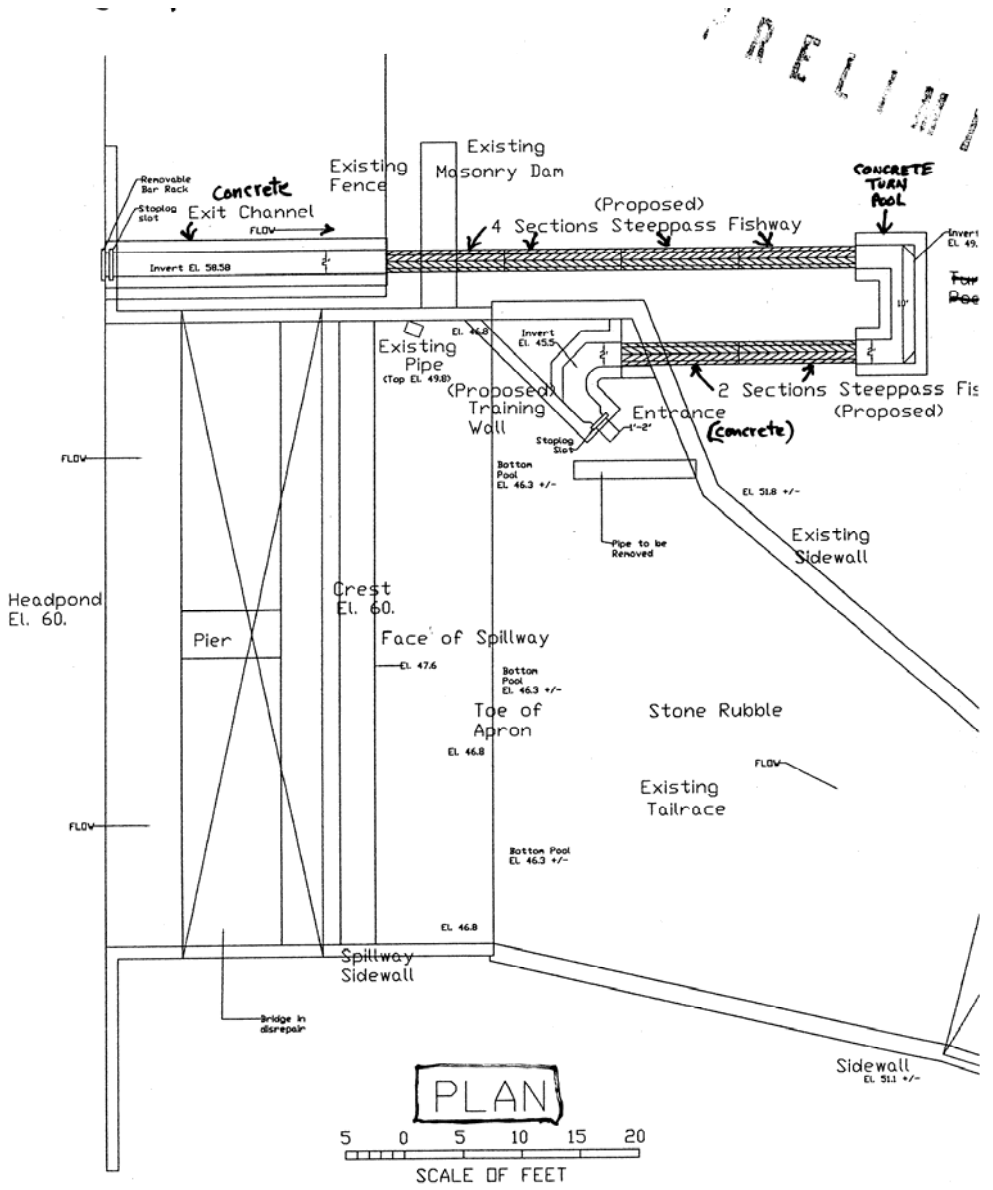
- state DEP has no budget for building fishways
- with limited staff, don't want to own many
- local sponsors/owners mean local buy-in
- lots of funding vehicles available
- most projects have multiple partners
- DEP/IFD maintains technical control, provides technical assistance every step of the way, including longterm operation.

Hallville Pond Fishway Project

A cooperative project with the Eastern Connecticut Conservation District

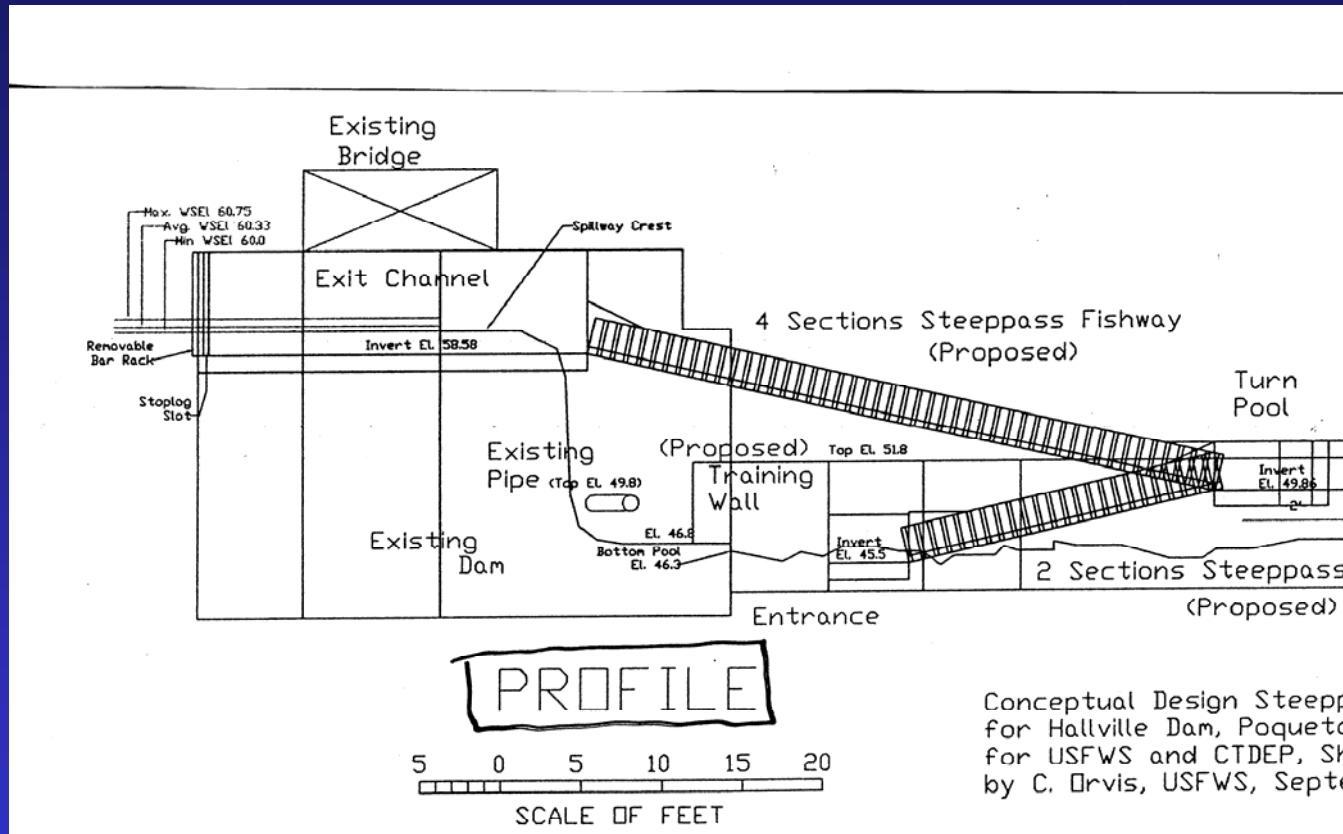
A 12 ft high steeppass fishway with one resting pool, a viewing window, and an electronic fish counter

Conceptual Plan- top view



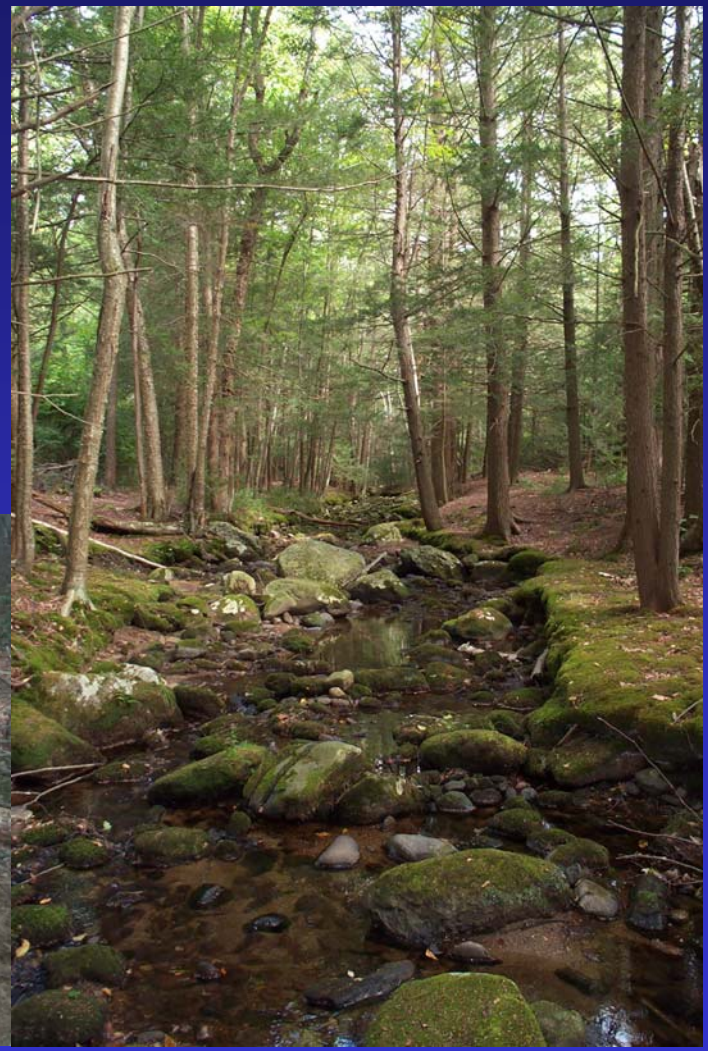
Targeting alewife, blueback herring, sea-run trout

Dam associated with an old paper mill. Owners cooperative (no cost to them) but need to be accommodated.



Conceptual plan- profile view

It’s the habitat, stupid!



It’s the habitat, stupid!

Fishways Help Get Fish Home

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