

River Restoration and Dam Removal



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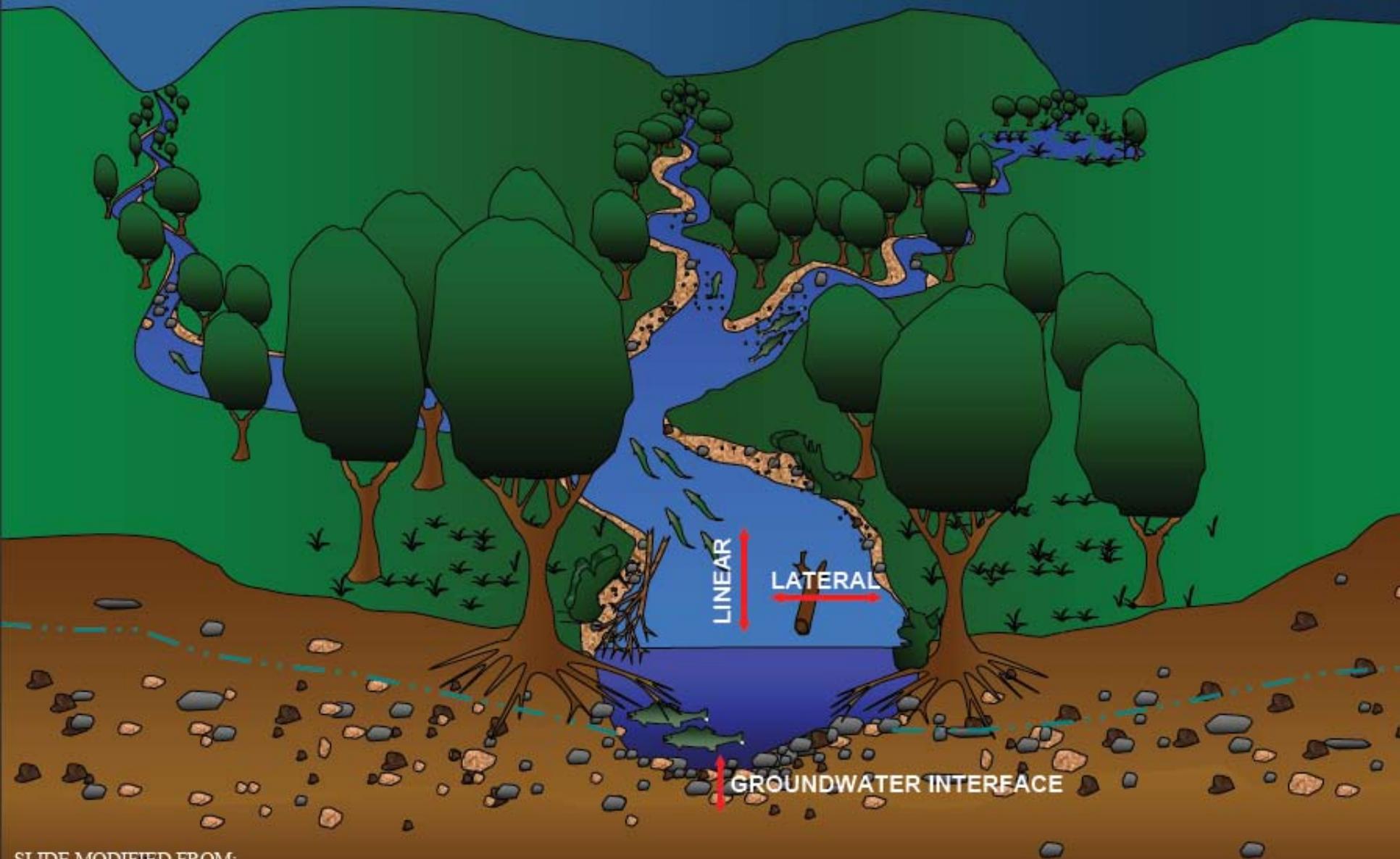


Characteristics of River Health

- Water Quality
- Water Quantity
- Connectivity
- Complexity
- Sediment Balance

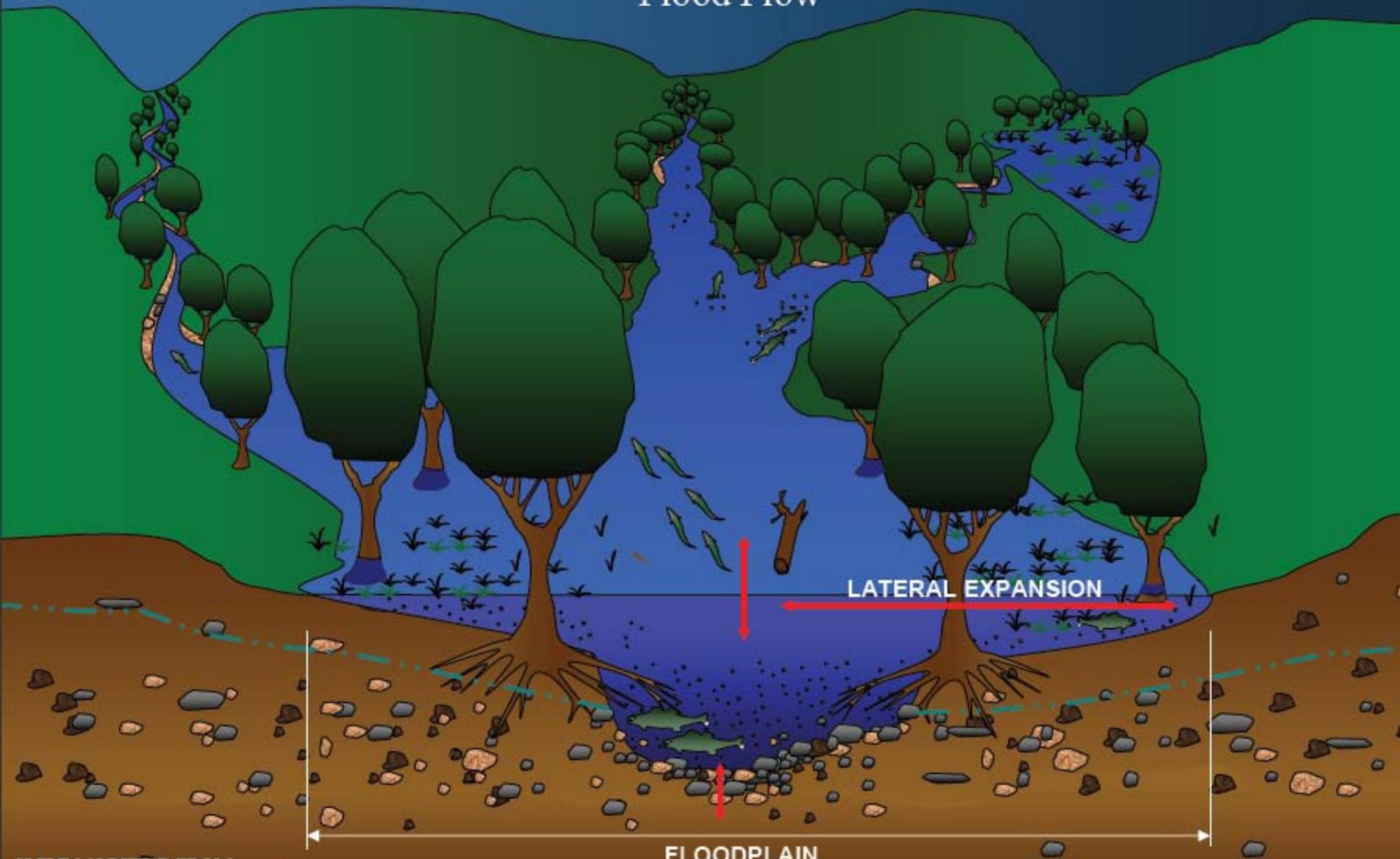
CONNECTIVITY OF A RIVER

Normal Flow



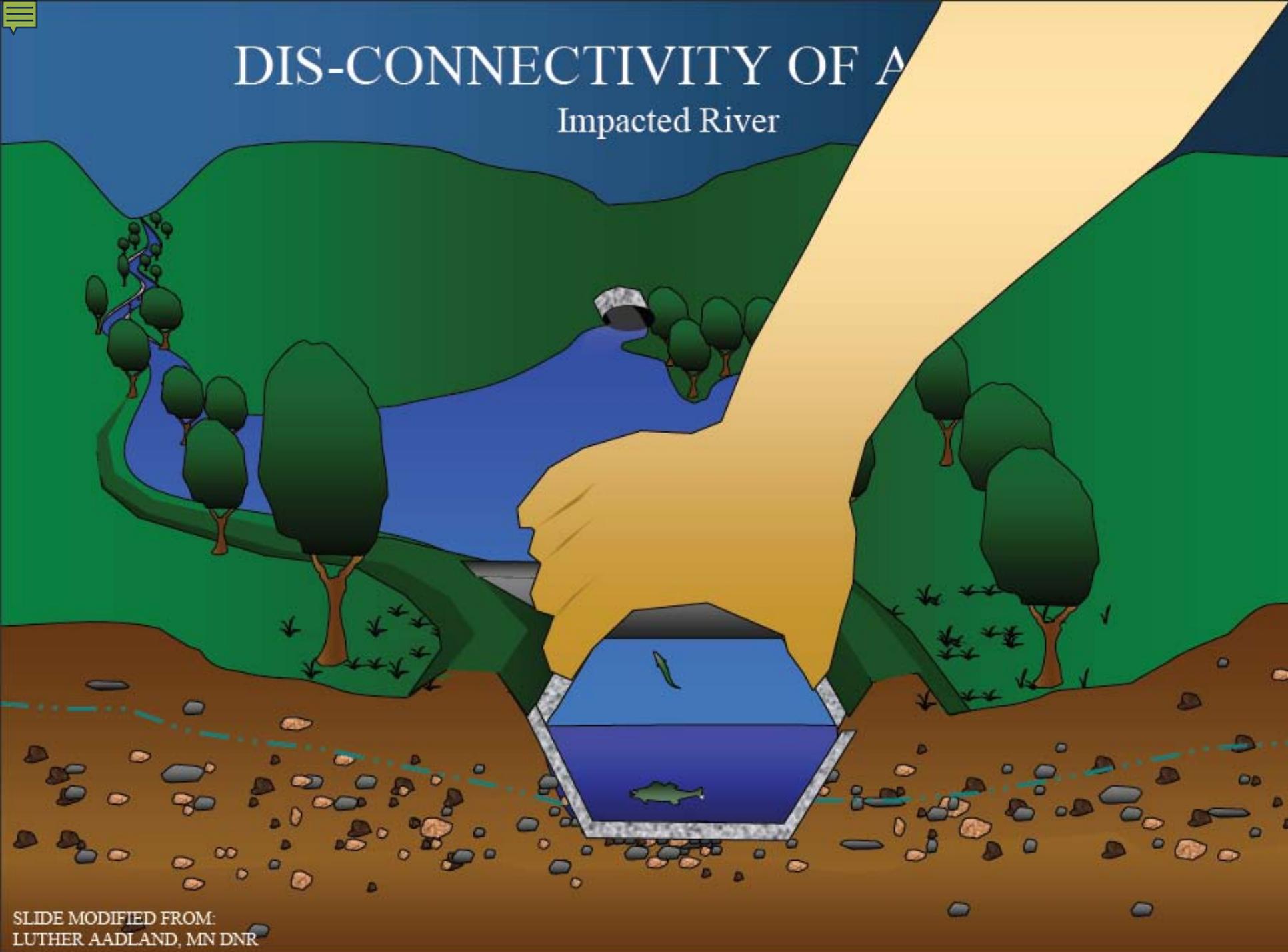
CONNECTIVITY OF A RIVER

Flood Flow



DIS-CONNECTIVITY OF A

Impacted River



IMPACTS OF DAMS

- Block fish passage
- Warm temperatures, lower O₂
- Trap sediment and nutrients
- Degrade water quality
- Degrade habitat, lose complexity
- Lose flow

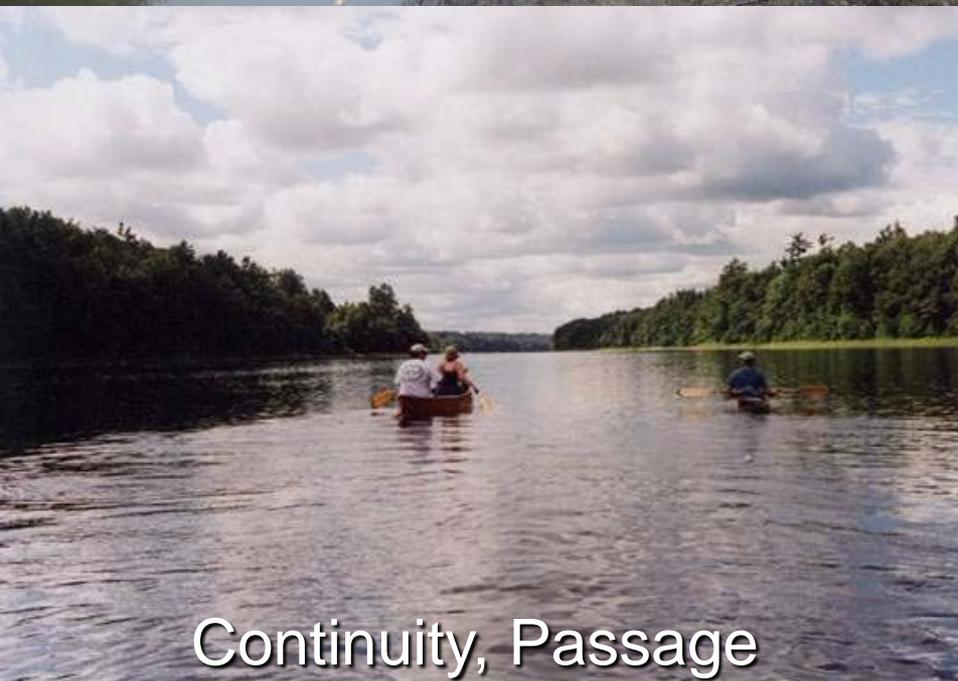




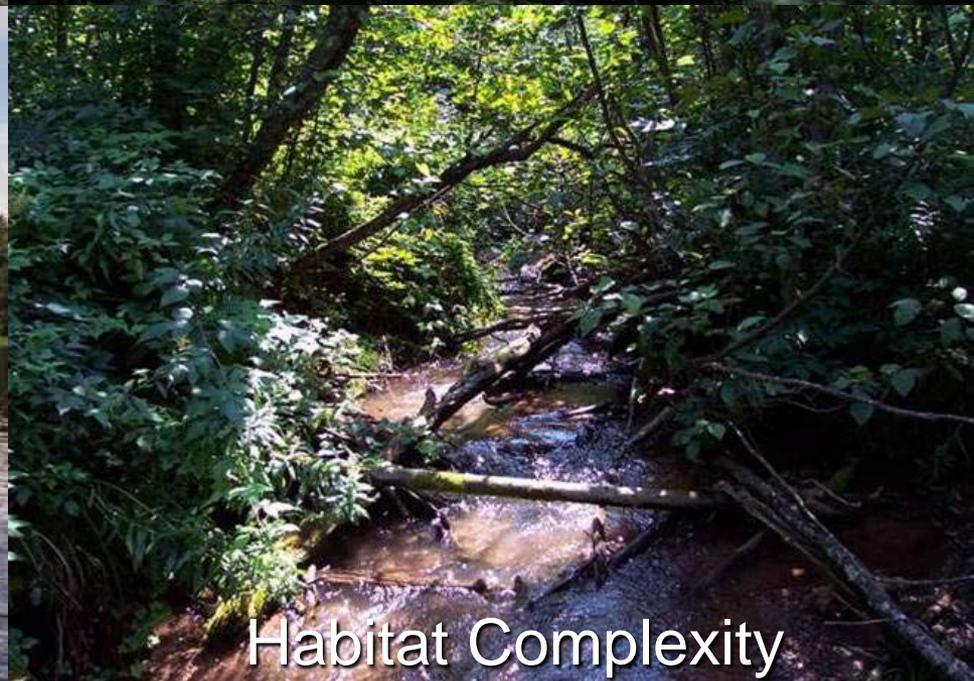
Stream Flow, Sediment Transport



Water Quality



Continuity, Passage



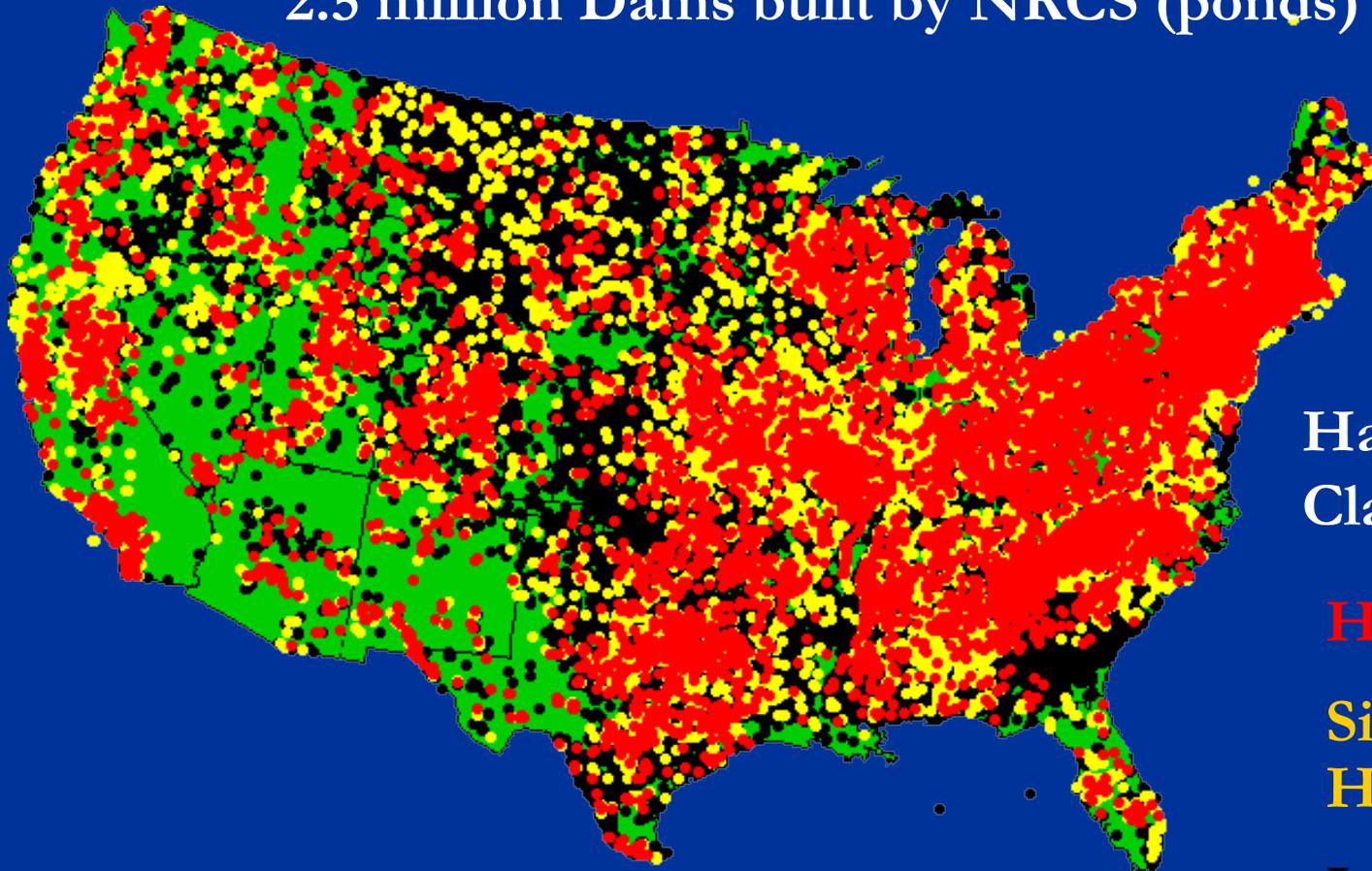
Habitat Complexity

Dams in the US - Estimates

79,000 Dams in NID Database

99,000 Dams in USFWS Barrier Database

2.5 million Dams built by NRCS (ponds)



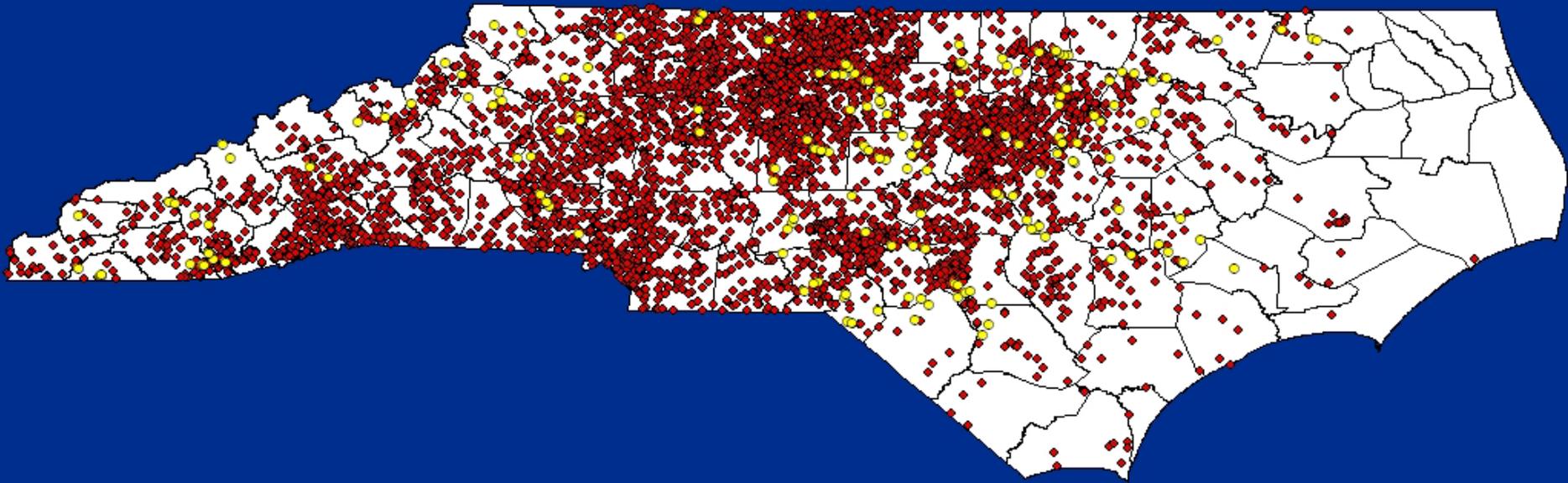
Hazard
Classifications:

High Hazard

Significant
Hazard

Low Hazard

Dams in North Carolina



5,624 in the database

60,000-80,000 estimated total



McCoy Linn Dam Removal, Spring Creek, Centre County, Pennsylvania, 2007

Benefits to Fish (SHAD!)



Blueback herring



Brook trout



Shortnose sturgeon



American shad



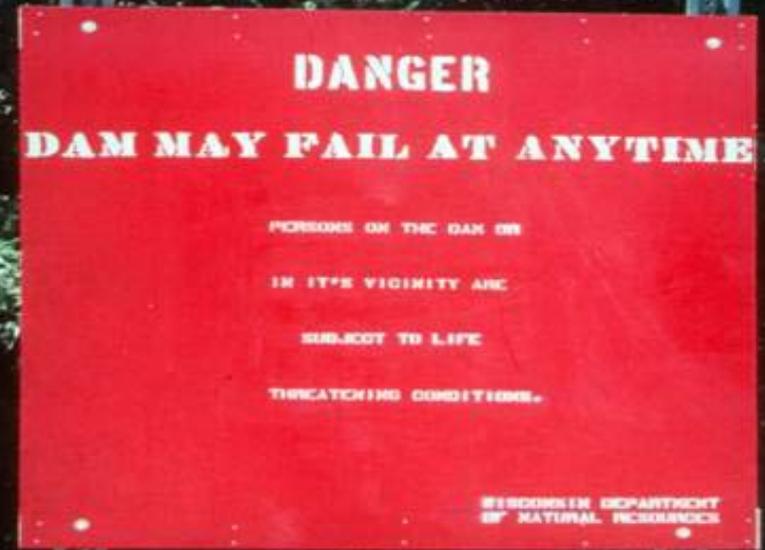
American eel

Photo: Andy Martinez

Benefits to other critters



Economic, Safety and Liability Incentives





Billington St. Dam Removal, Plymouth MA

View Looking Upstream

WITH DAM



View looking Downstream

WITH DAM

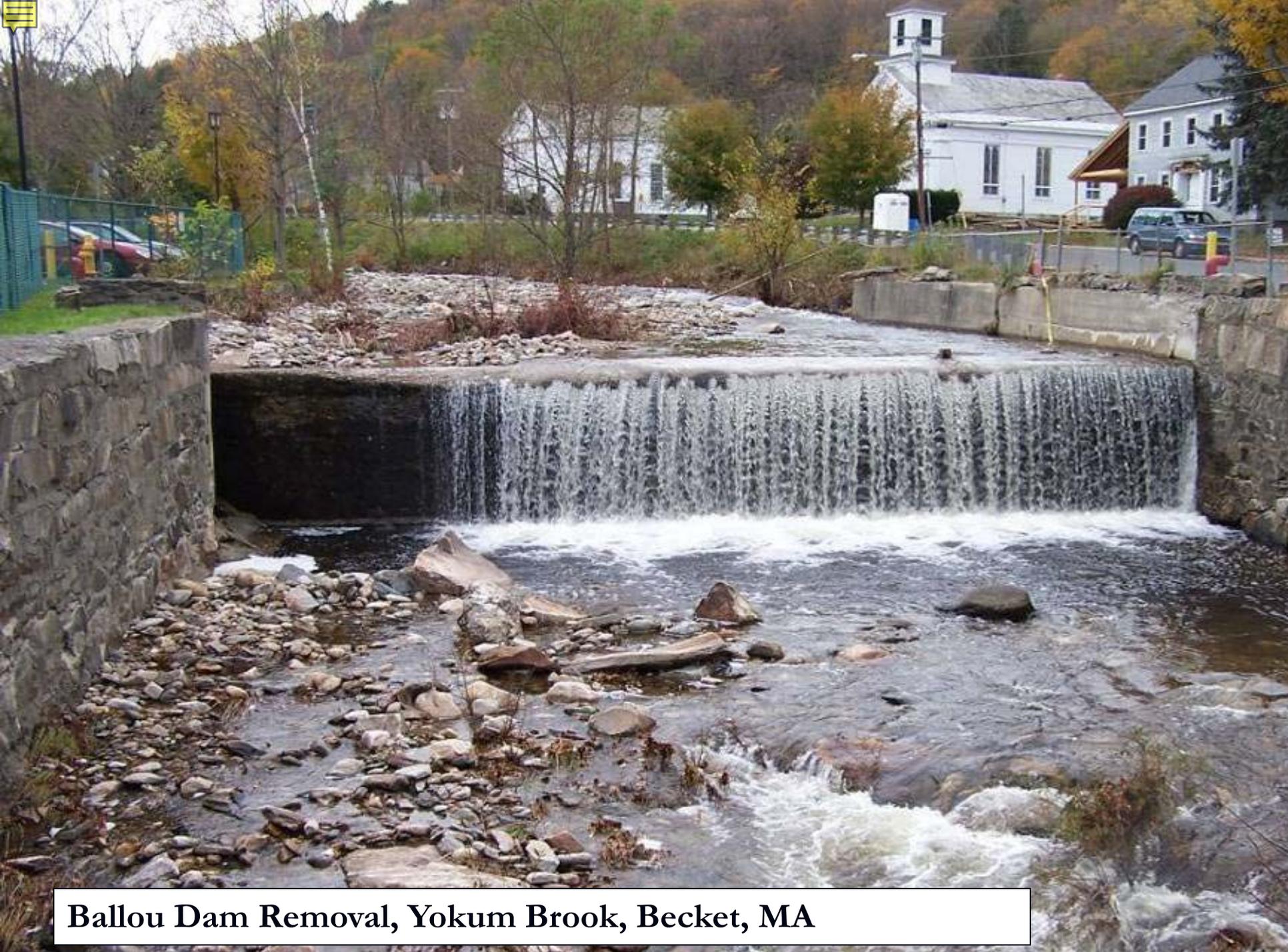


WITHOUT DAM



WITHOUT DAM





Ballou Dam Removal, Yokum Brook, Becket, MA



What's wrong with this picture? A lot if you're a fish!



Dingle Road Culvert Replacement, Bronson Brook, Worthington, MA

Not New to Us: Dam Removals in NC

Name	Stream	Basin	Date
Dillsboro Dam	Tuckaseegee River	Little TN	2010
Steeles Mill Dam	Hitchcock Creek	Pee Dee	2009
Spruce Pine Dam	North Toe River	French Broad	2009
Carbonton Dam	Deep River	Cape Fear	2006
Lowell Dam	Little River	Neuse	2005
Freedom Park Dam	Little Sugar Creek	Catawba	2002
Unnamed Dam	Marks Creek	Neuse	2002
Rains Mill Dam	Neuse River	Neuse	1999
Quaker Neck Dam	Neuse River	Neuse	1998
Cherry Hospital Dam	Neuse River	Neuse	1998
Ash Bear Pen Dam	Unknown	Unknown	1990
Forny Ridge Dam	Unknown	Unknown	1988

Carbtonton Dam Removal on the Deep River



Before
removal



After
removal

Lowell Mill Dam Removal on the Little River

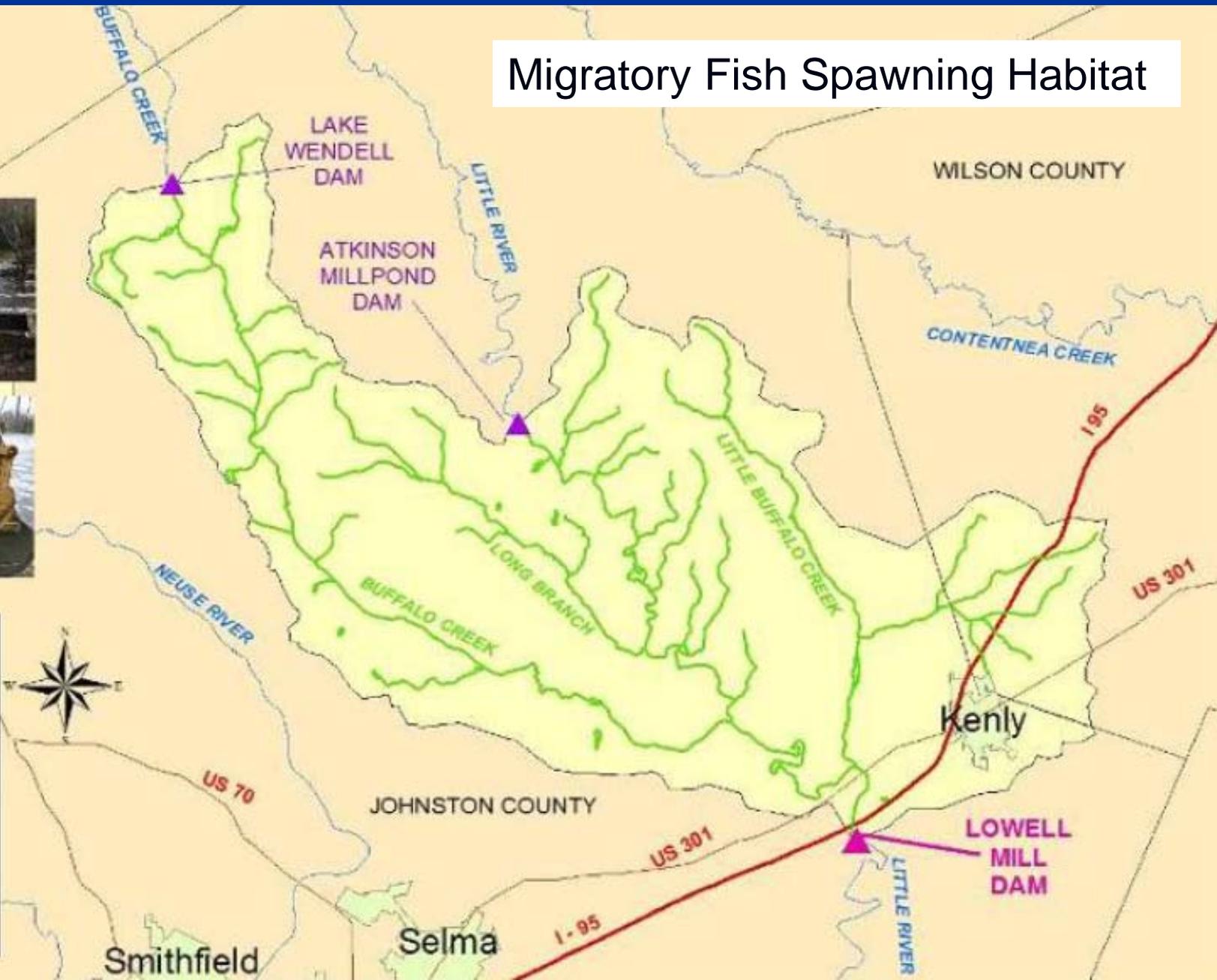
Migratory Fish Spawning Habitat



LOWELL MILL DAM REMOVAL PROJECT

- ▲ LOWELL MILL DAM
- ▲ OTHER DAMS
- STREAMS AFFECTED BY LOWELL MILL DAM REMOVAL
- OTHER MAJOR STREAMS

0 1 2 Miles





Steeles Mill Dam Post-Removal



American Rivers in NC:
Working to build a
successful river restoration
program



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