

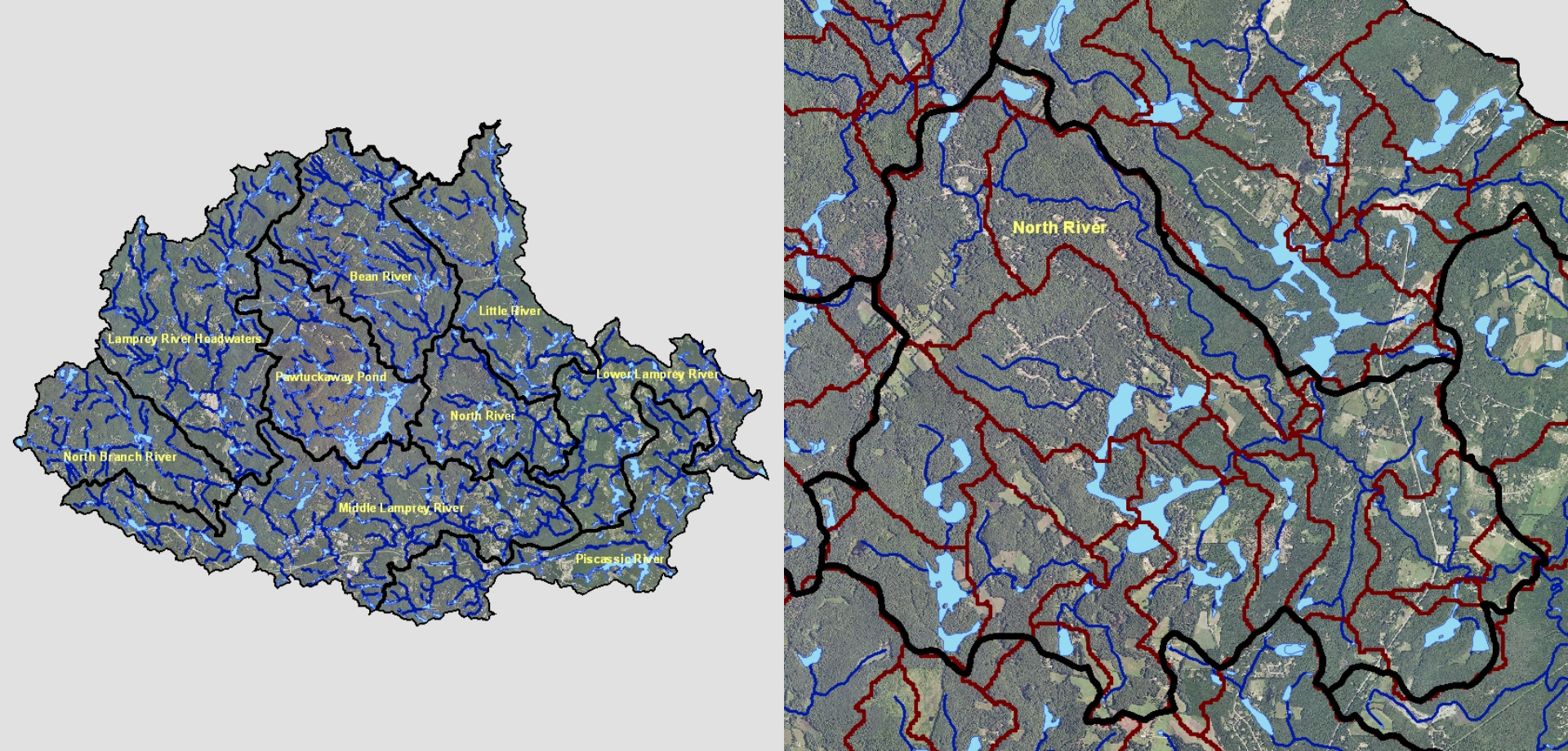


# Fish Communities of the Lamprey River Watershed

# Objectives

- ◆ Collect information on the status of Eastern Brook Trout in the Lamprey River Watershed and as part of an ongoing project using survey protocols developed for the Eastern Brook Trout Joint Venture.
- ◆ Collect information on the distribution and status of fish species of concern, listed in New Hampshire's Wildlife Action Plan, and recommend strategies to promote healthy populations and prevent declines of these species.
- ◆ Collect baseline fish community data that will help monitor water and habitat quality throughout the Lamprey River watershed. Identify species that may be used as indicators of healthy water quality and good habitat.
- ◆ Recommend potential conservation strategies that will protect aquatic habitats and promote water quality throughout the Lamprey River watershed.





The Lamprey River watershed can be divided into 9 subwatersheds based on the USGS Hydrologic Unit Code (HUC) system.

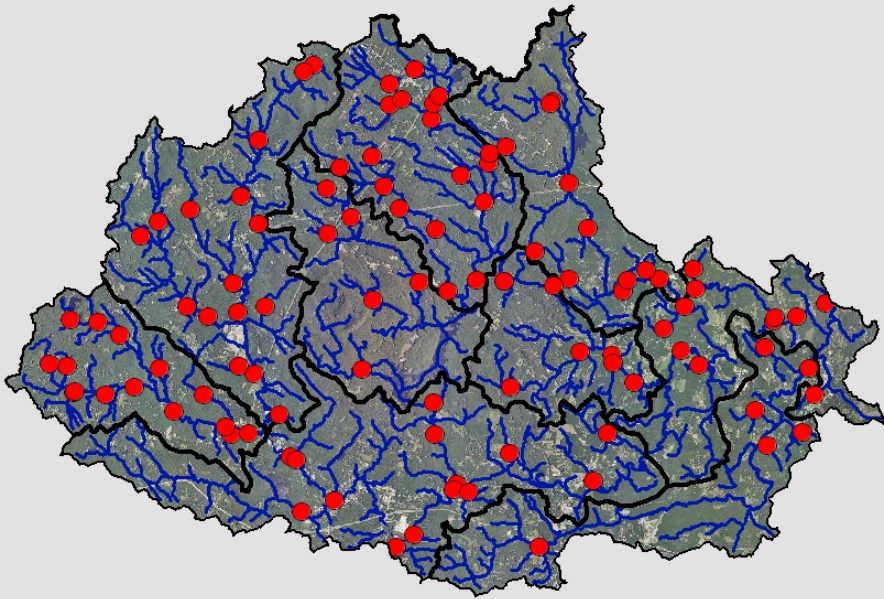


## Survey Methods

- Electrofishing surveys were conducted at 105 sites.
- Sample length was usually 100 meters.
- All fish species were counted, measured, and weighed.
- Habitat features and potential impacts were noted at each site.

## Results

- 25 different fish species were recorded.
- A total of 4,226 fish were counted.
- Fallfish, white suckers, and common shiners were the most widespread and abundant species encountered.







Beaver  
Dam



Golden shiner



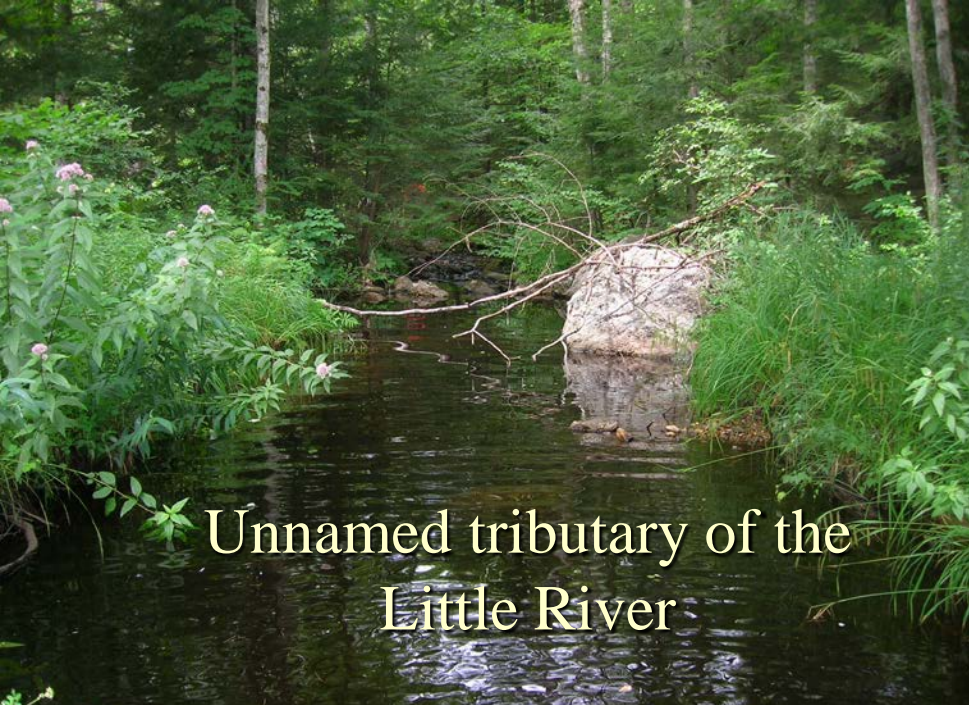
Common white sucker



Old mill  
dam or  
road

Upper North  
Branch  
River





Unnamed tributary of the  
Little River



Brown bullhead



Fallfish



Abandoned beaver  
pond





Cobble/boulder  
substrate



Longnose dace



Blacknose dace



North River  
looking  
upstream

Gravel substrate





North River



Pumpkinseed



Chain  
pickerel



Lamprey River in Raymond





Common shiner (top) and Fallfish (bottom)



Creek  
chubsucker



Margined Madtom



Yellow Perch



# Lamprey River Mainstem

Downstream  
of dam

Bunker Pond Dam

Smallmouth bass

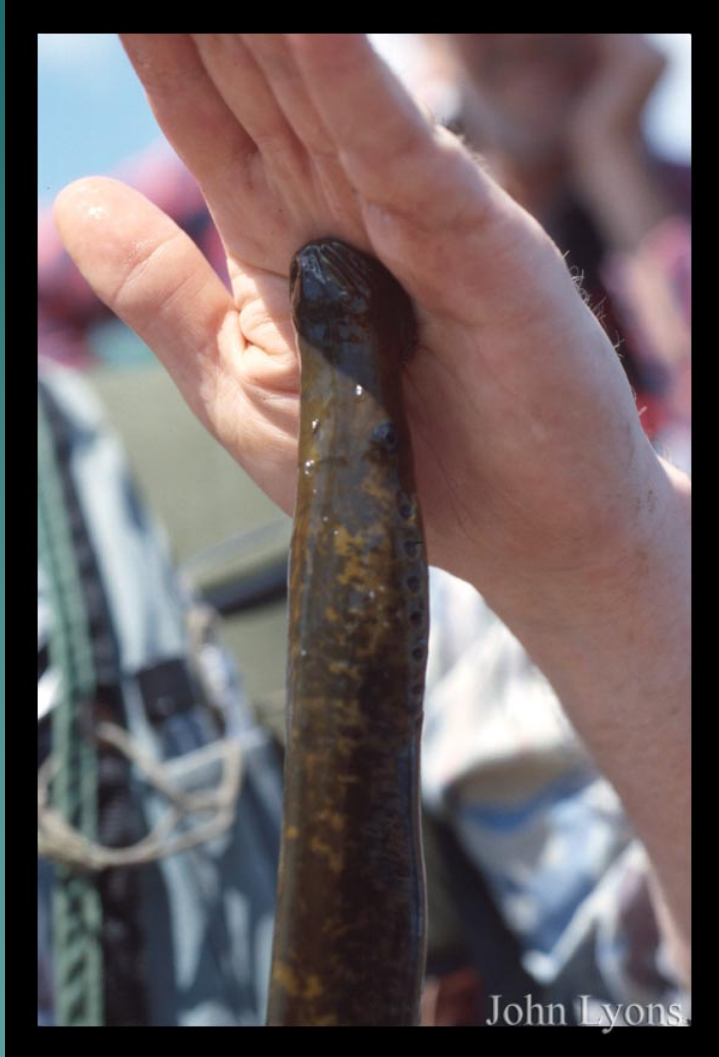


Redbreast sunfish

Largemouth bass



# Diadromous Fish Species of Concern in the Lamprey River Watershed



Sea lamprey



River herring

American  
eel





# Freshwater Fish Species of Concern in the Lamprey River Watershed



Banded Sunfish



Swamp Darter

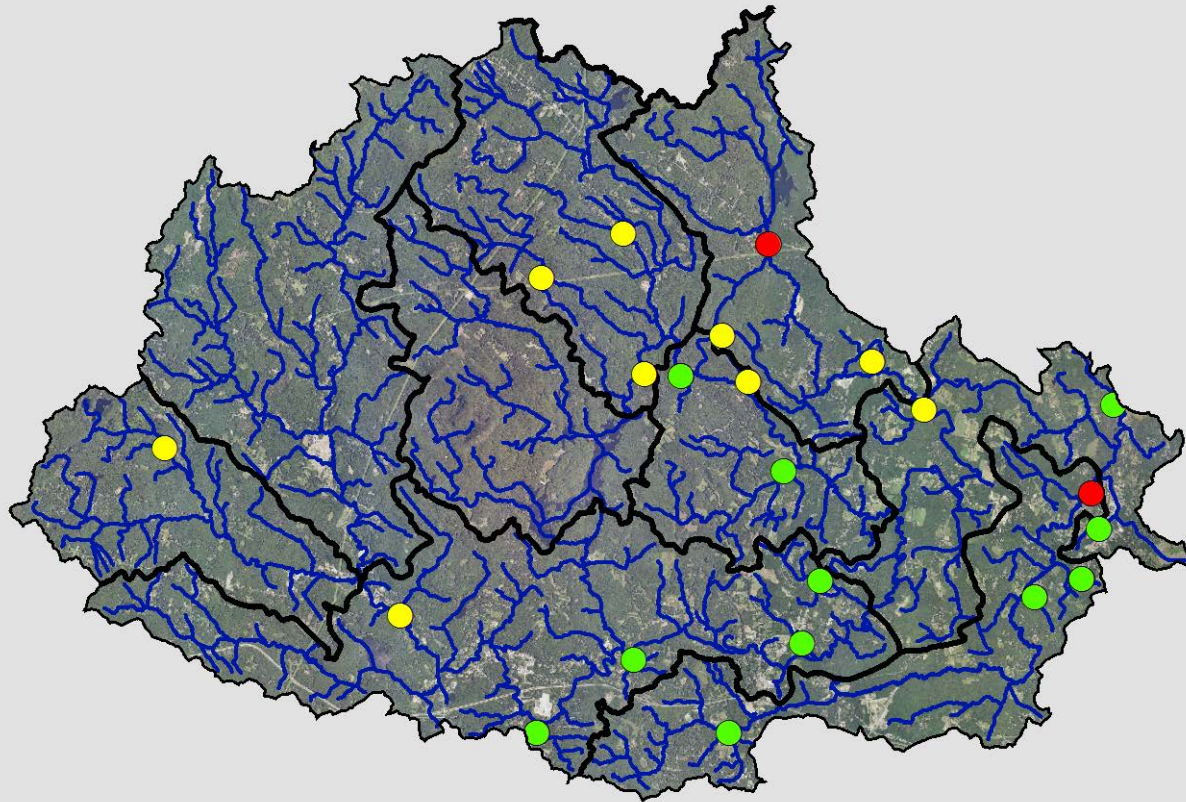


Bridle Shiner



Redfin Pickerel





Swamp Darter = Red  
Redfin Pickerel = Green  
Banded Sunfish = Yellow



Bridle shiners appear to have been extirpated from a number of water bodies where their presence was recorded in the late 1930's



Examples of water bodies where bridge shiners appear to be extirpated

- ◆ Mill Pond (Oyster River)
- ◆ Wheelright Pond (Lee)
- ◆ Canobie Lake (Windham)
- ◆ Merrimack River (Boscawen)
- ◆ Heads Pond (Hooksett)

Examples of water bodies where bridge shiners are still present

- ◆ Jones Brook (Middleton)
- ◆ Exeter River (Fremont)
- ◆ Cocheco River (Farmington)
- ◆ Lamprey River (Raymond)
- ◆ Isinglass River (Barrington)





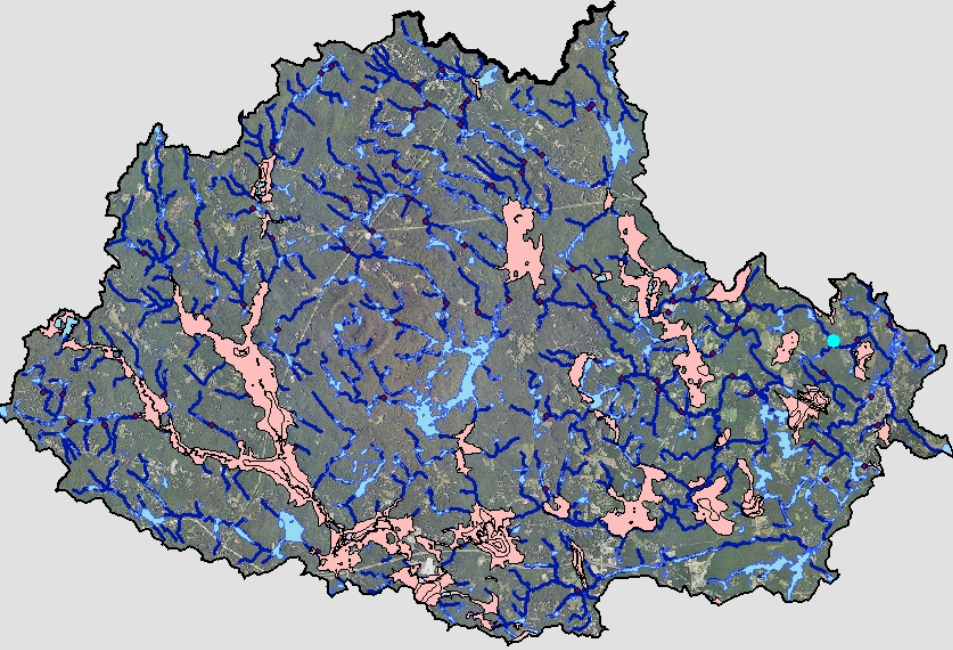




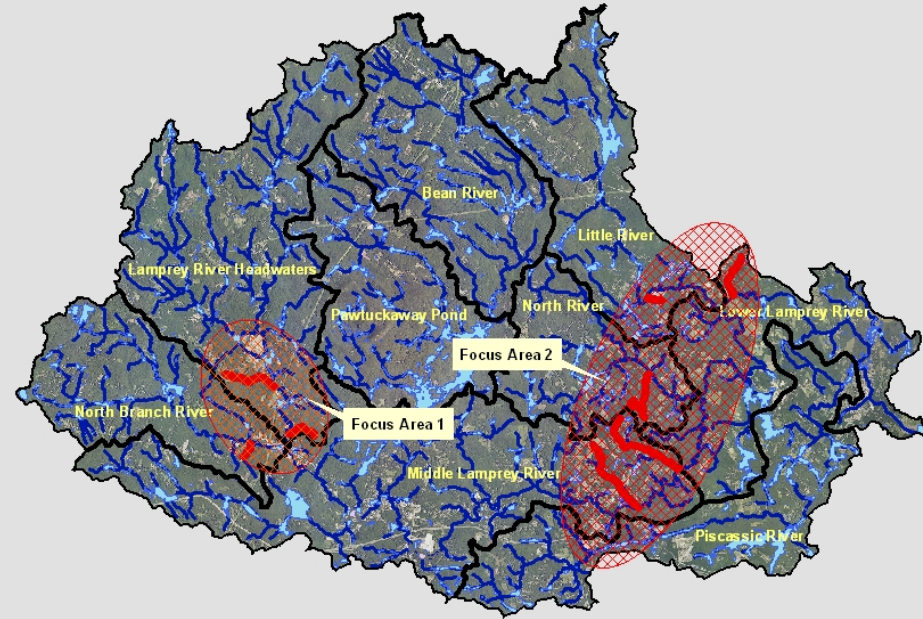
Eastern Brook Trout Joint Venture



## Stratified drift aquifers in the Lamprey River Watershed



## Brook trout focus areas



Brook trout depend on spring fed streams in  
southeastern New Hampshire





Rum Brook





Aunt Mary Brook



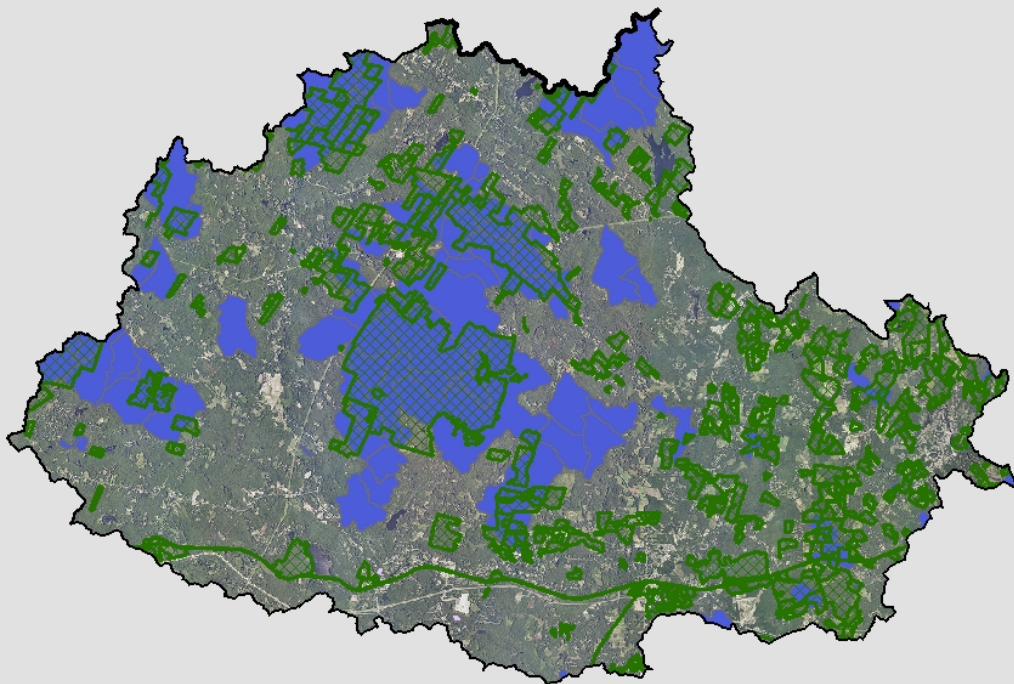


Depending on the source of groundwater, spring fed streams can be surprisingly resilient or extremely sensitive habitat.



A driveway culvert and excavation within the stream channel resulted in subsurface flow downstream.





Remaining catchments with less than 6% impervious surface coverage (blue) in the Lamprey River watershed. Existing conservation land is outlined in green.

- A study in Maryland showed that brook trout were not present in watersheds with greater than 4% impervious land cover.
- A USGS study showed impacts to aquatic invertebrates at impervious surface coverages of between 5 and 10%.

**Land protection alone cannot prevent declines in aquatic habitat and water quality.**





# Riparian Zones and Healthy Fish Communities

Removing vegetation along waterbodies results in:

- Alterations to natural aquatic habitats
- Increased water temperature
- Increased pollution/sediment introduction rates
- Reduction of stream bank stability
- A loss of cover for fish and wildlife

Riparian buffers should range from 30 m to 300 m depending on the desired level of protection.



# Stream Crossing Design





# Stormwater Management

Disconnecting stormwater runoff from headwater streams will have lasting benefits for aquatic habitats and water quality.



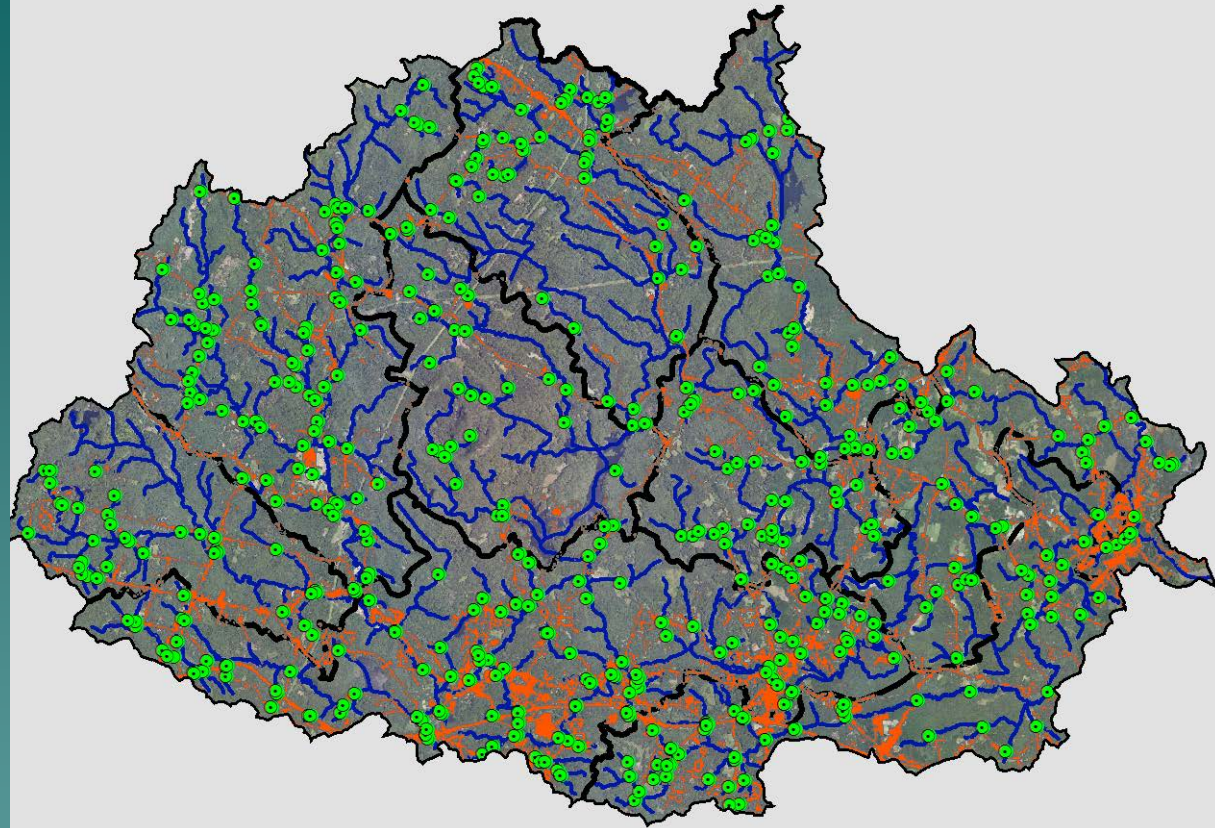
## UNH Stormwater Center

- 2005 Data Report shows that low impact development designs (LID) performed better than traditional designs like retention ponds.
- Porous asphalt reduces runoff and improves groundwater recharge.

U.S. Forest Service publication: Environmentally Sensitive Road Maintenance Practices for Dirt and Gravel Roads. Available: <http://www.fs.fed.us/eng/pubs/pdf/11771802.pdf>



# Where to begin?



Impervious surfaces (red) and stream crossings (green)  
in the Lamprey River Watershed

- Stream crossing surveys
- Stormwater outfall surveys
- Riparian buffer mapping



# Education and Outreach

The Full Lamprey River Fish Survey Report is available on the Lamprey River Advisory Committee (LRAC) website.

