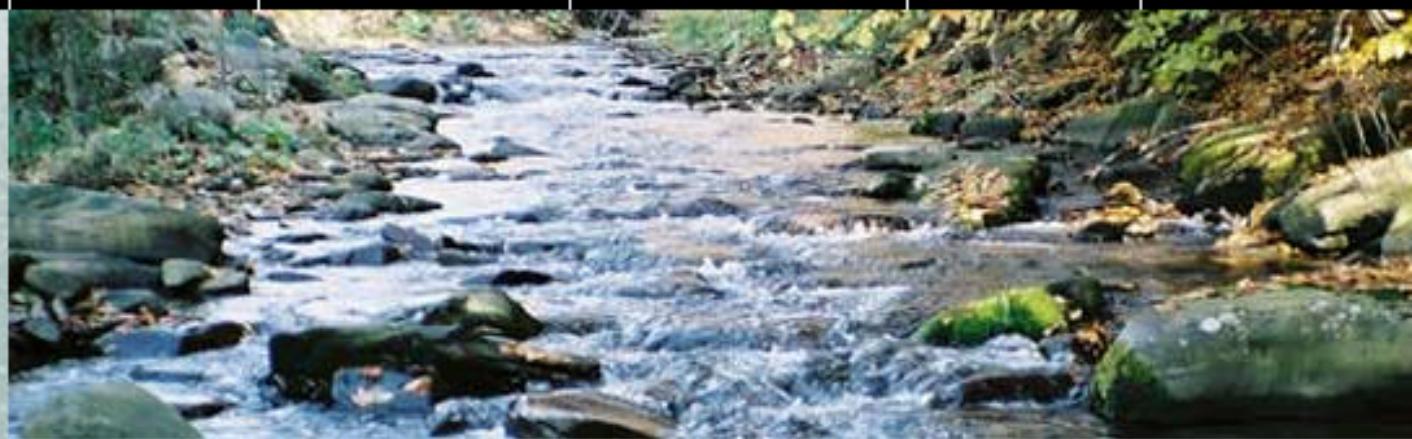


NORTHEAST INSTREAM HABITAT PROGRAM

University of Massachusetts Amherst

Planning river restoration at the watershed scale with help of dynamic mapping

[About Us](#)[White Paper](#)[MesoHABSIM](#)[Projects](#)[Resources](#)

Current Projects

- Eightmile River
- Fenton River
- Mill River
- Pomperaug River
- Souhegan River
- Upper Delaware River

Welcome to the Northeast Instream Habitat Program

The Northeast Instream Habitat Program at the [Department of Natural Resources Conservation](#) aims to improve the understanding of functional relationships between biota and their physical environment in running water ecosystems. It is a multidisciplinary effort combining environmental engineering, biology and geology for the restoration and conservation of running waters. The present focus is to develop effective techniques for habitat assessment and the predictive modeling of river restoration measures to maintain ecological integrity.

What we do/want to do:

- Applied research on instream habitat
- Development of methods for river restoration planning
- Professional training
- Technical assistance
- Outreach

Stakeholder Advisory Committee

- FWS (NE Regional Office)
- USEPA (Region 1)
- NOAA (Restoration Center)
- NPS (Eightmile River Project)
- USGS
 - Contee Lab. (BRD)
 - MA WRD
- TNC
 - Eastern US Freshwater Program
 - Connecticut River Program
- TU (National)
- American Rivers
- MA DCR
- MA Fisheries and Game
 - Fisheries
 - Riverways Program
- CT DEP
- VT Dept. of Fish and Wildlife
- RD DEM
- NH DES
- The Pomperaug River Watershed Coalition
- UMass Extension
- UMass Dept. of NRC
- UMass NRE - College

Ask the fish !

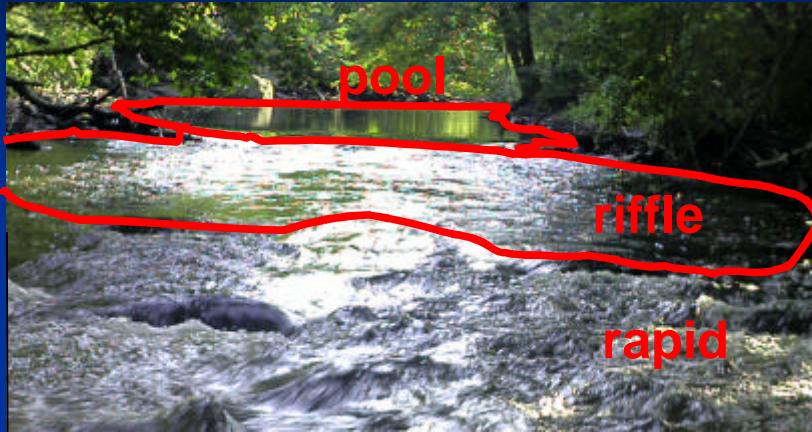


Grid Electrofishing

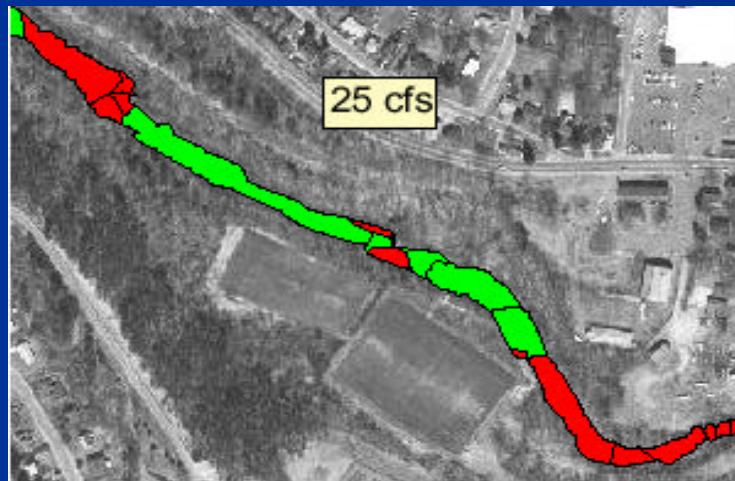




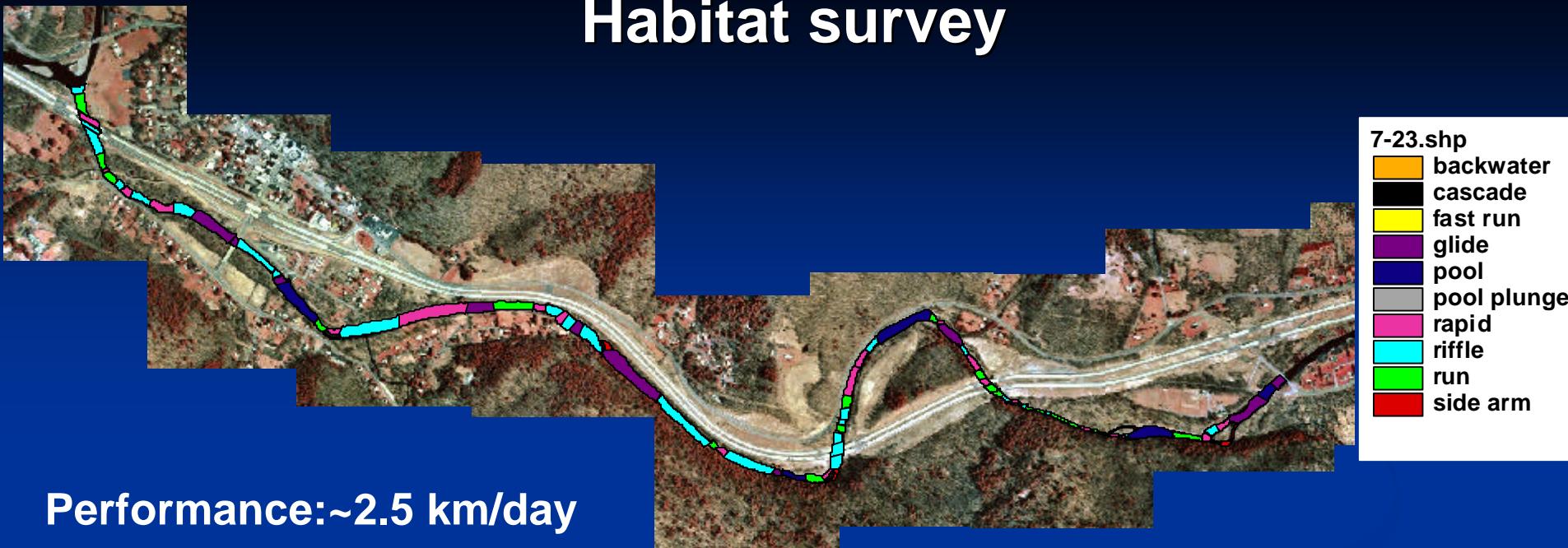
Habitat mapping : Fish response functions



FALLFISH	
Presence (76 %)	Beta
BOULDER	1.95
SHADING	-1.07
DEPTH 0-25 cm	-1.76
VELOCITY 45-60 cm /s	1.06
RUN	-0.57
High abundance (60 %)	
Overhanging vegetation	-0.97



Habitat survey

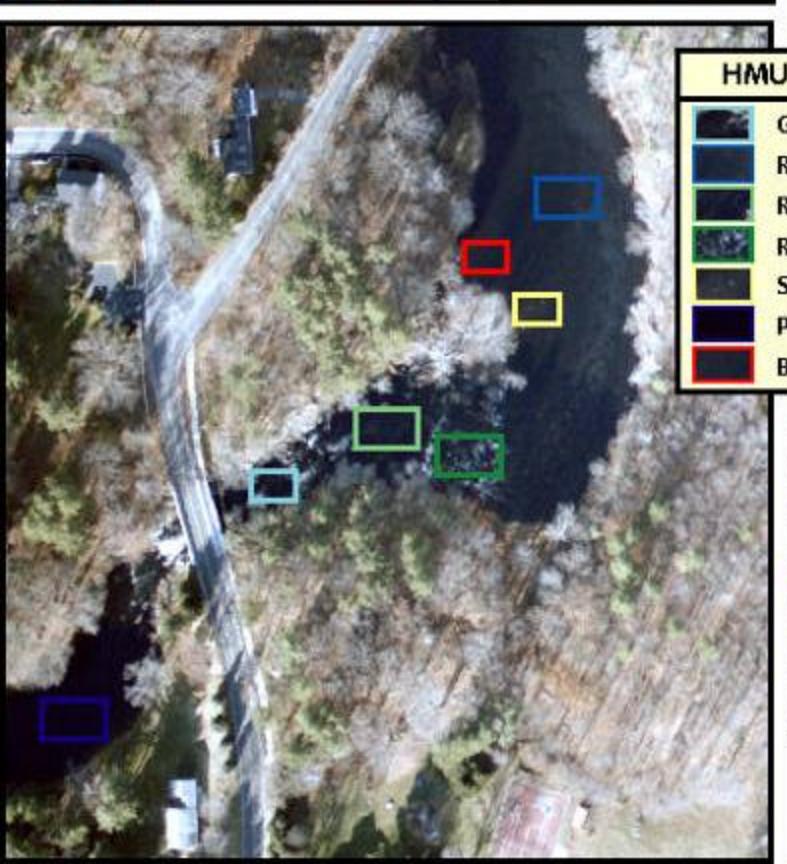
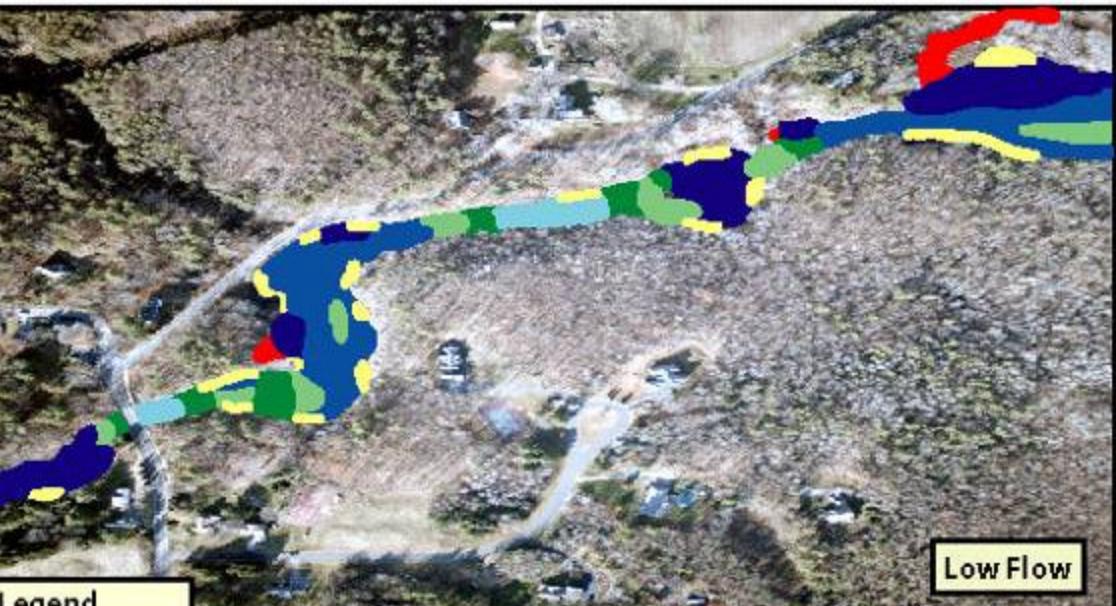


Performance: ~2.5 km/day

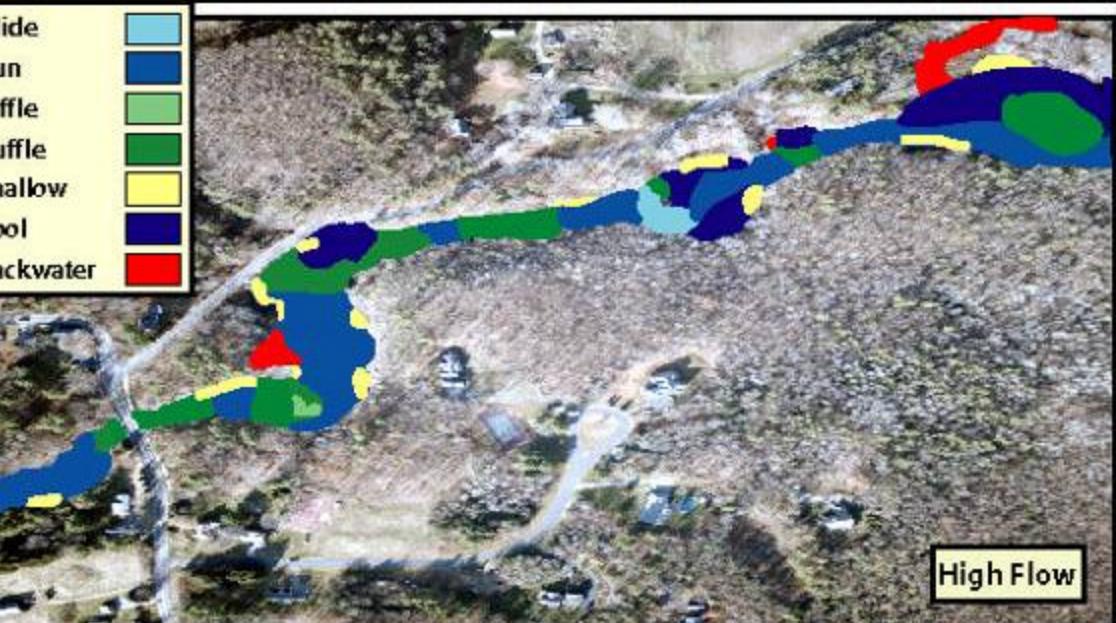




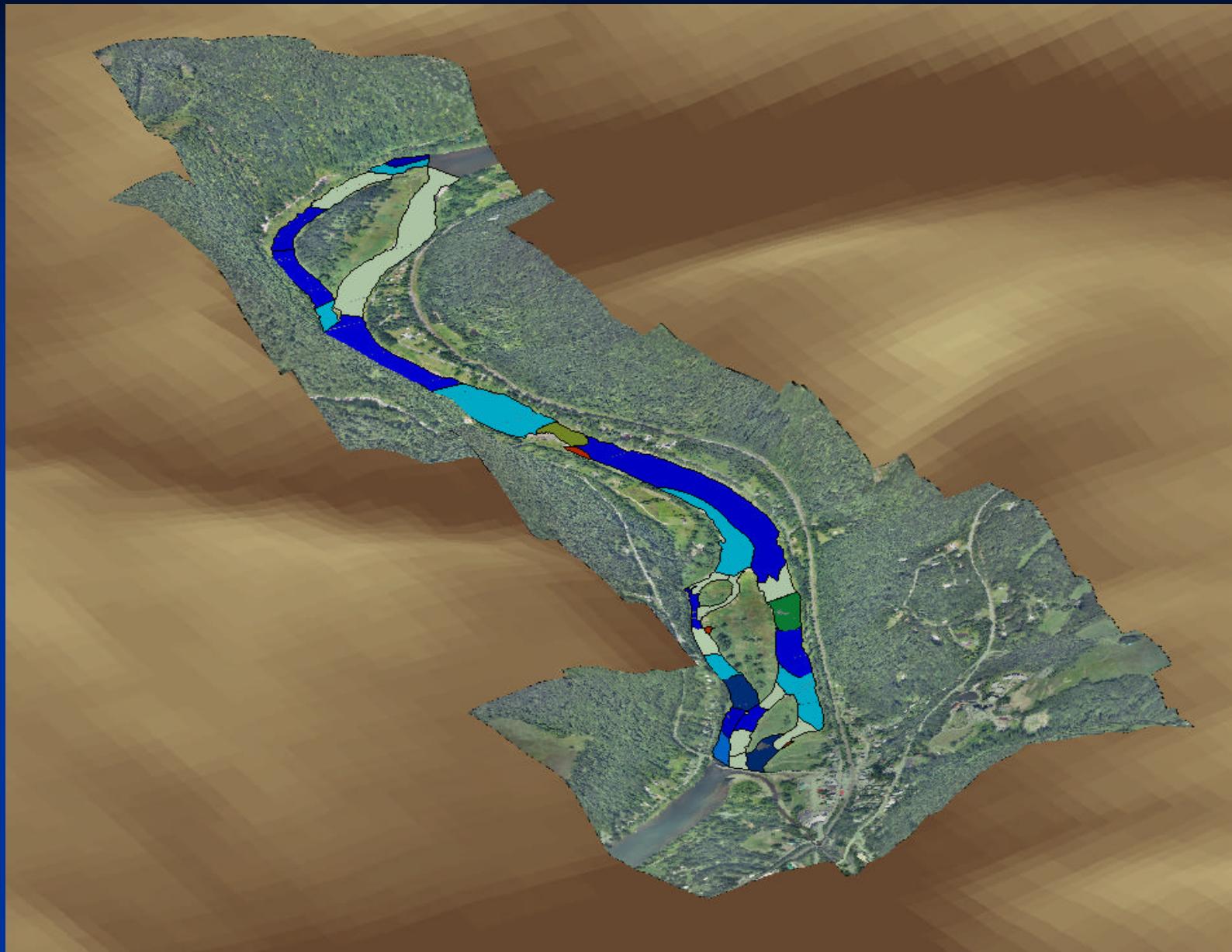
Simulated Multispectral HMU Mapping of Lamprey River

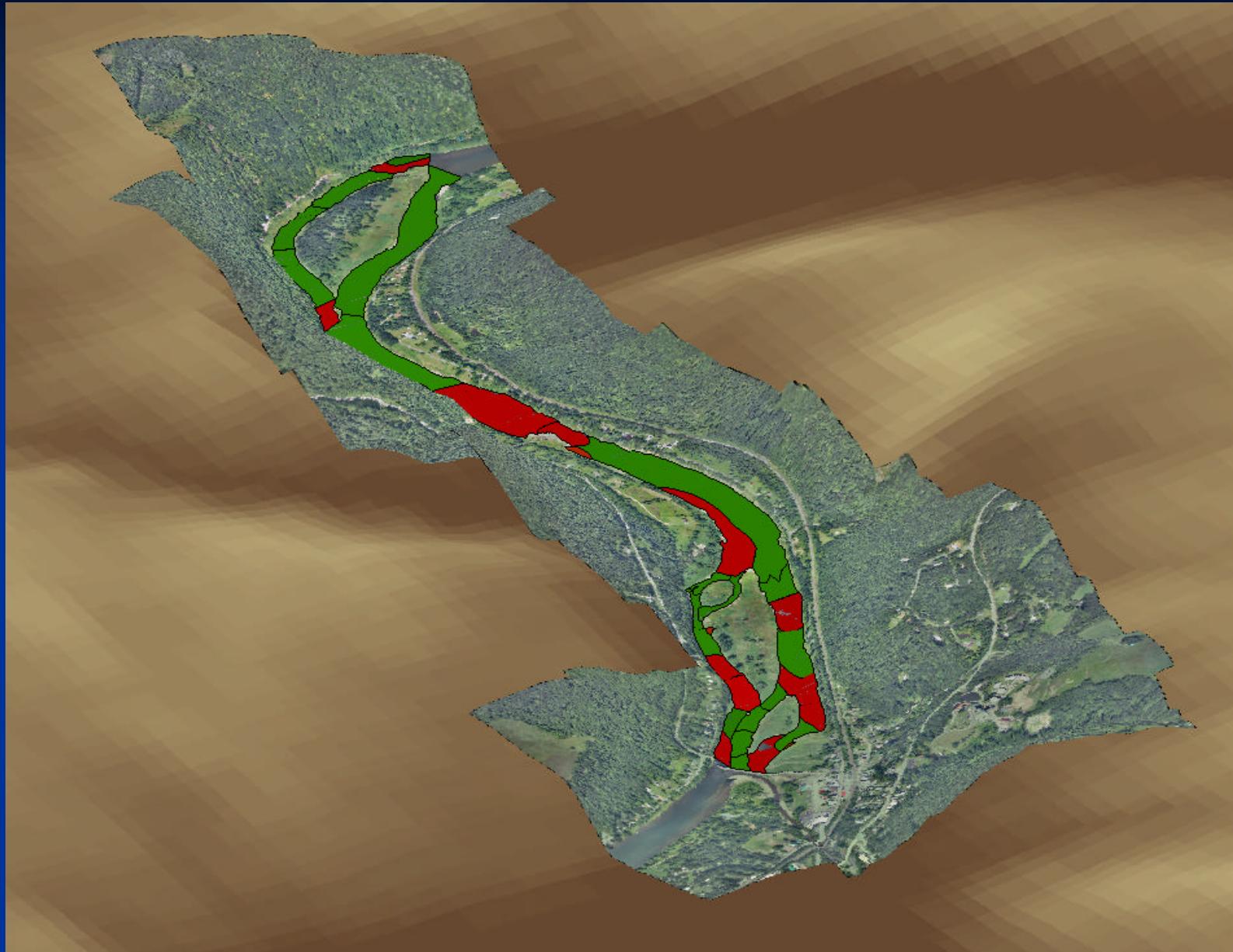


HMU Legend	
Glide	Light Blue
Run	Dark Blue
Riffle	Light Green
Ruffle	Dark Green
Shallow	Yellow
Pool	Dark Blue
Backwater	Red

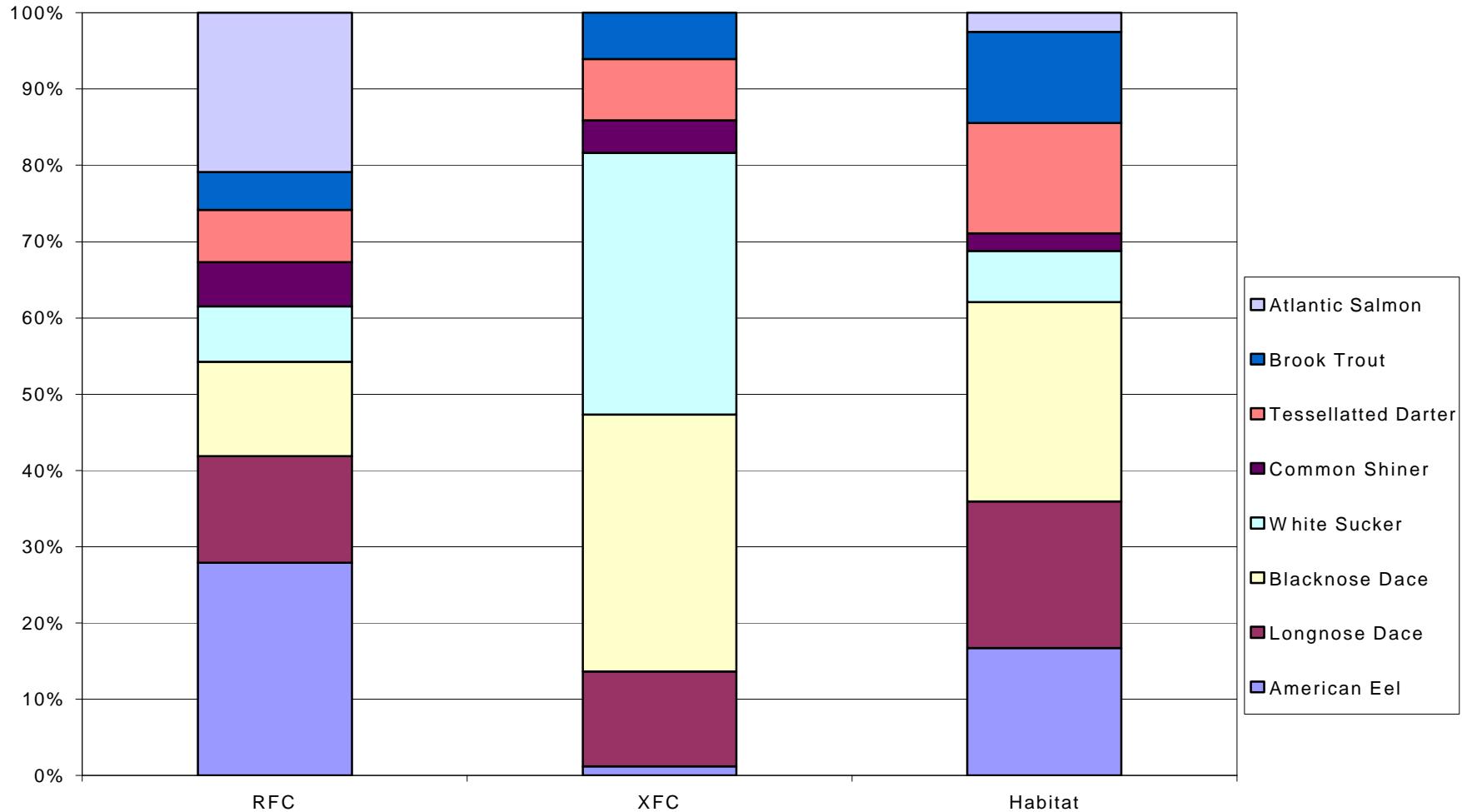


Example of proposed use of multispectral high-resolution imagery to remotely classify hydro-morphological units. Close-up area (lower left) shows Packer's Falls region along Bennett road.

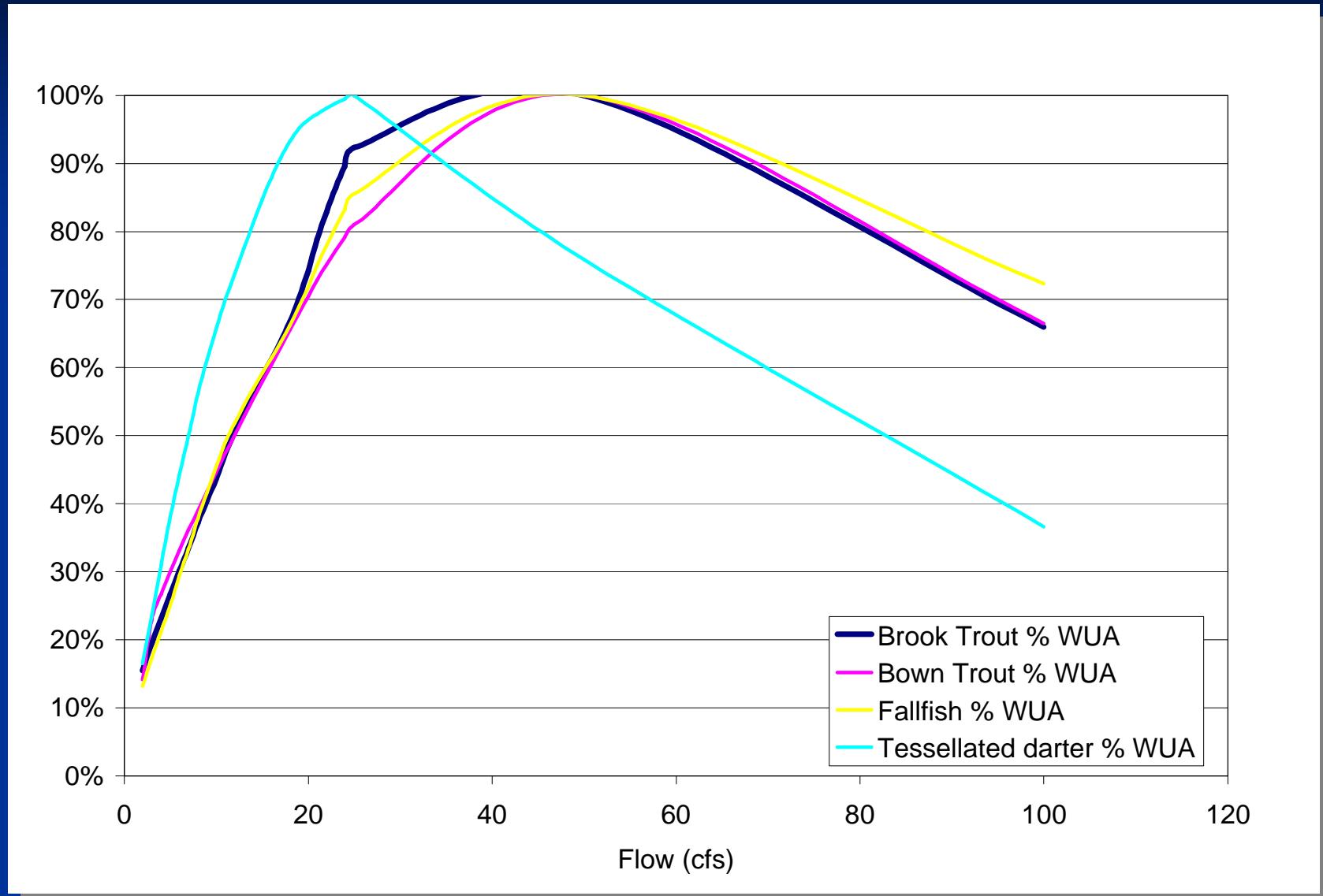




Preliminary comparison of fish communities and habitat availability



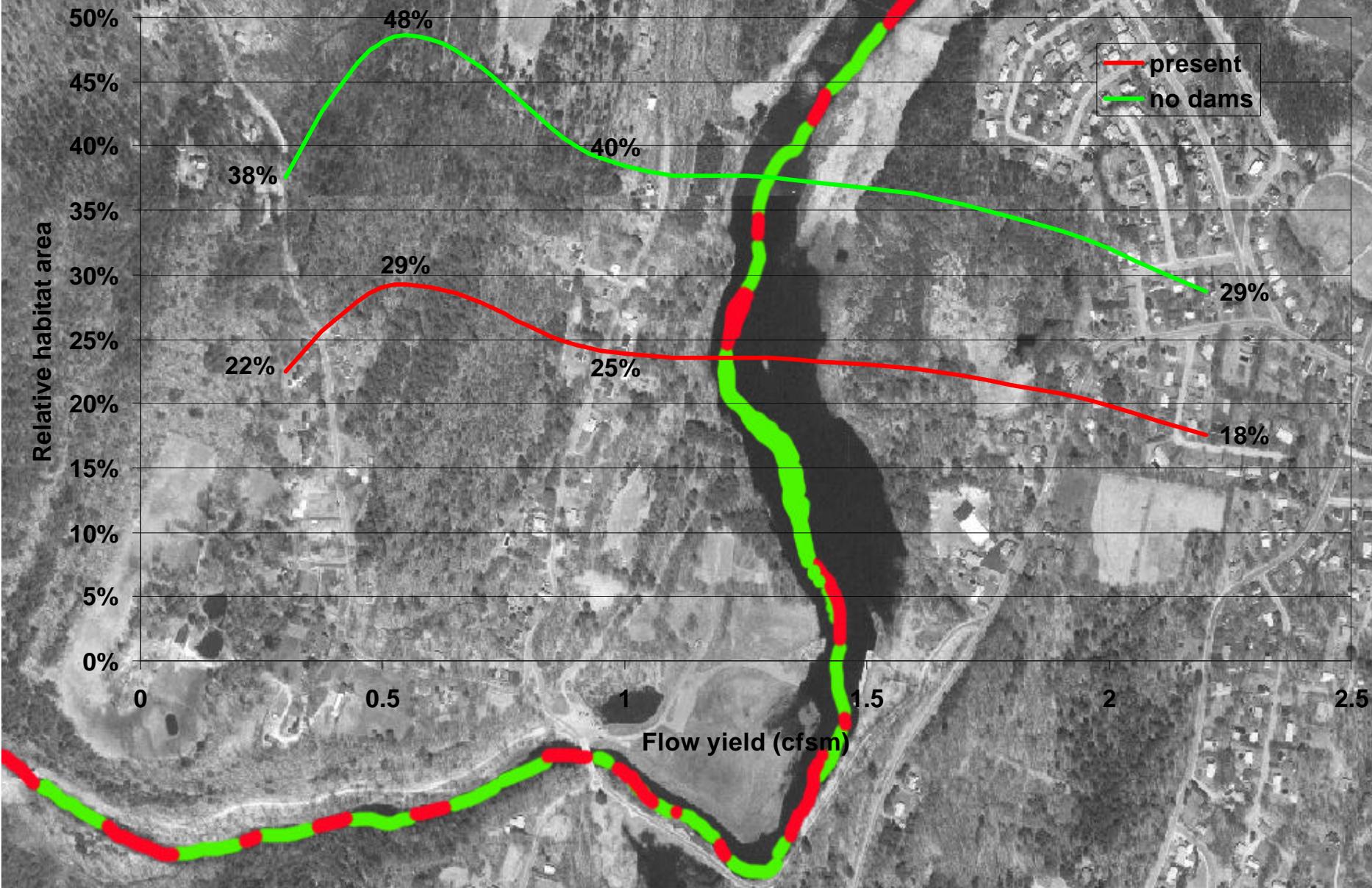
Habitat rating curves for the study area



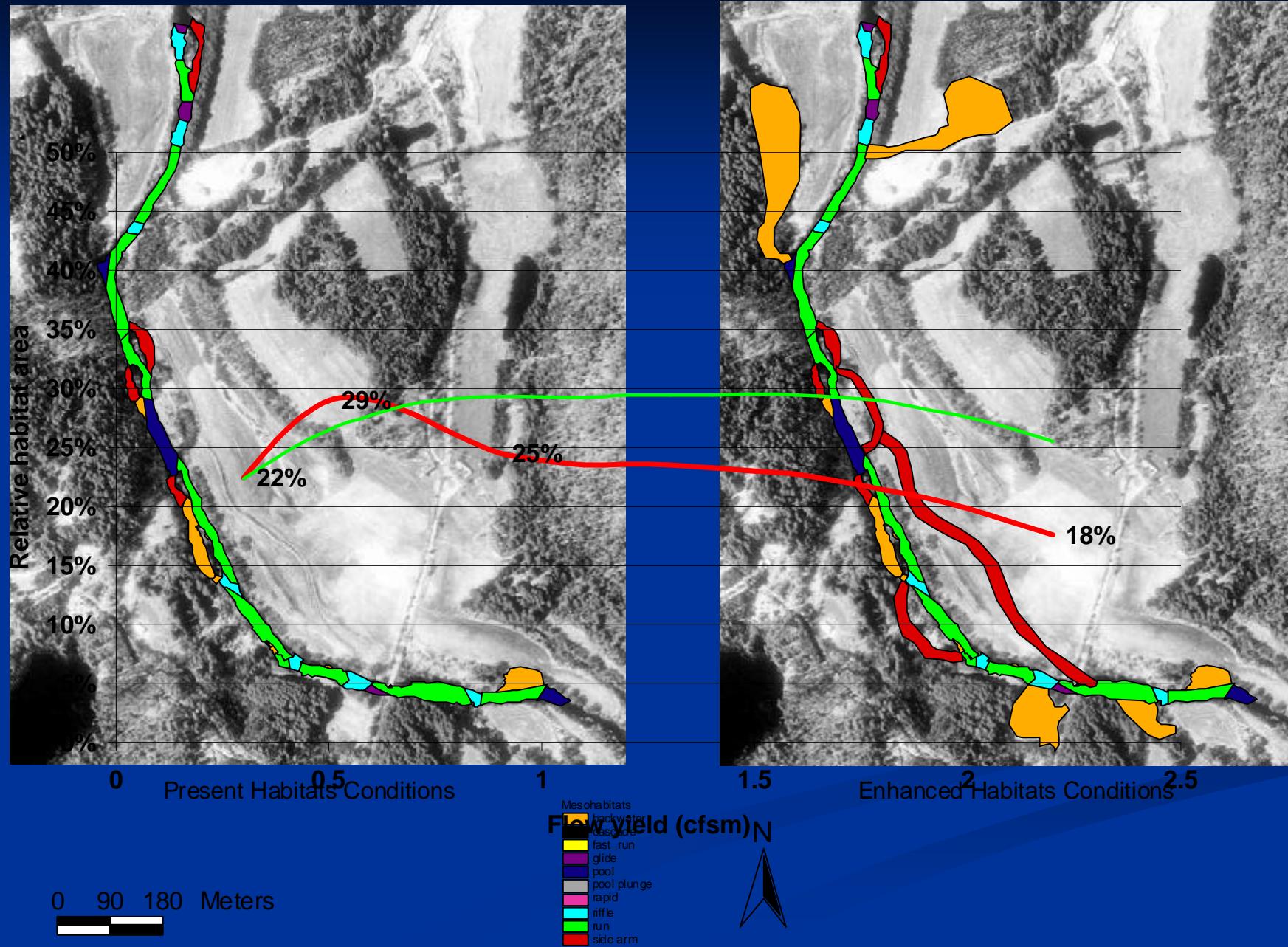
Dam Removal Studies

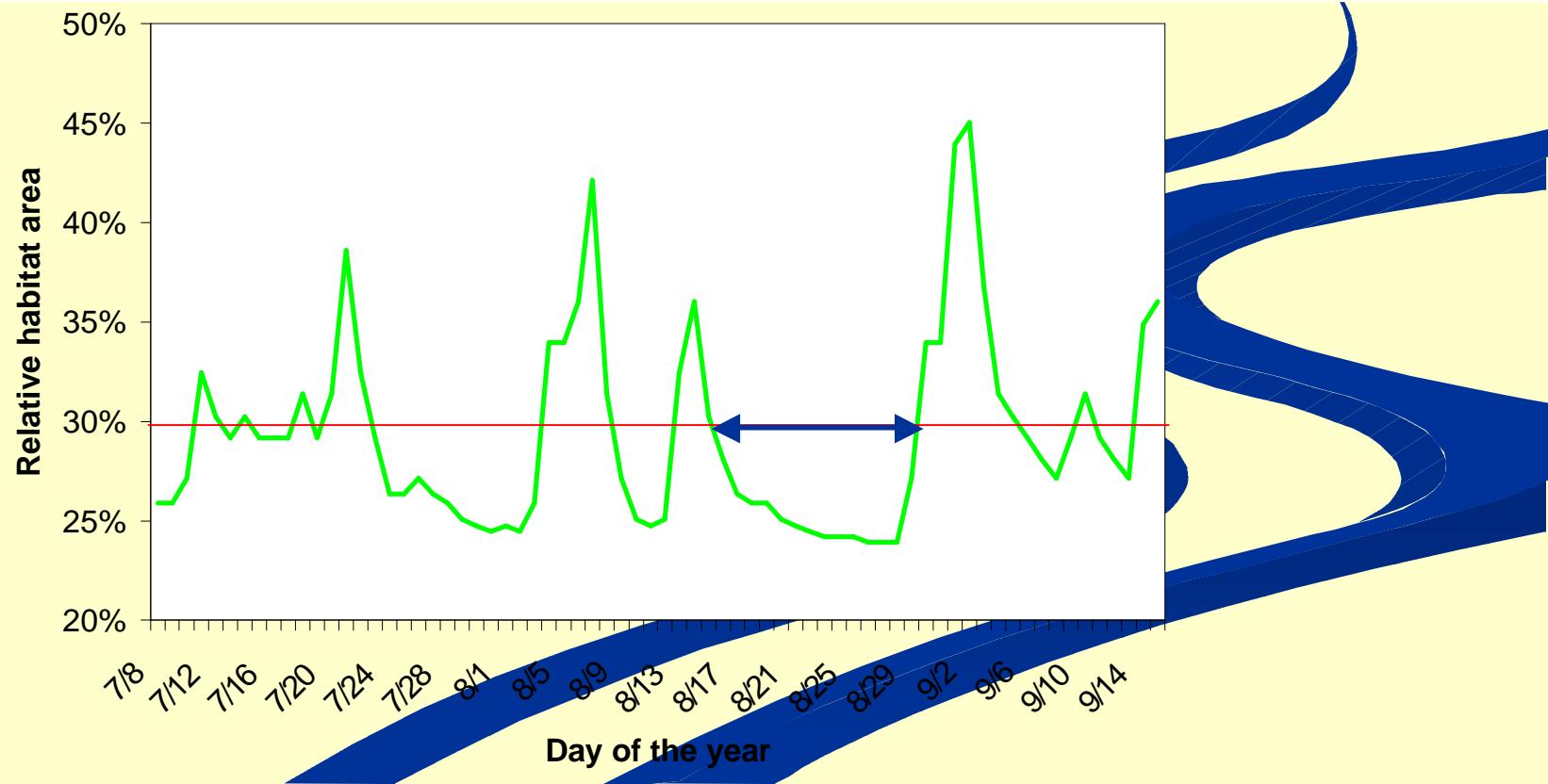
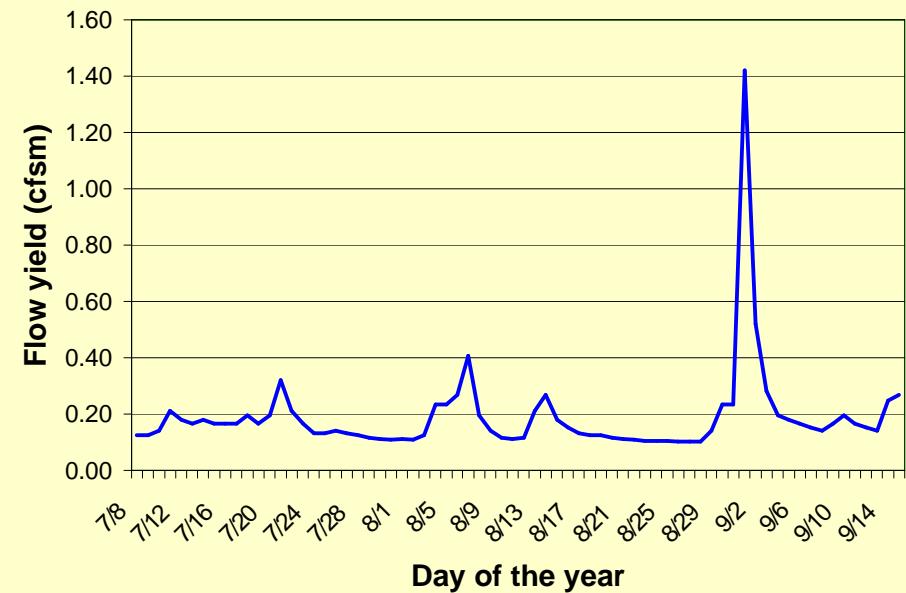
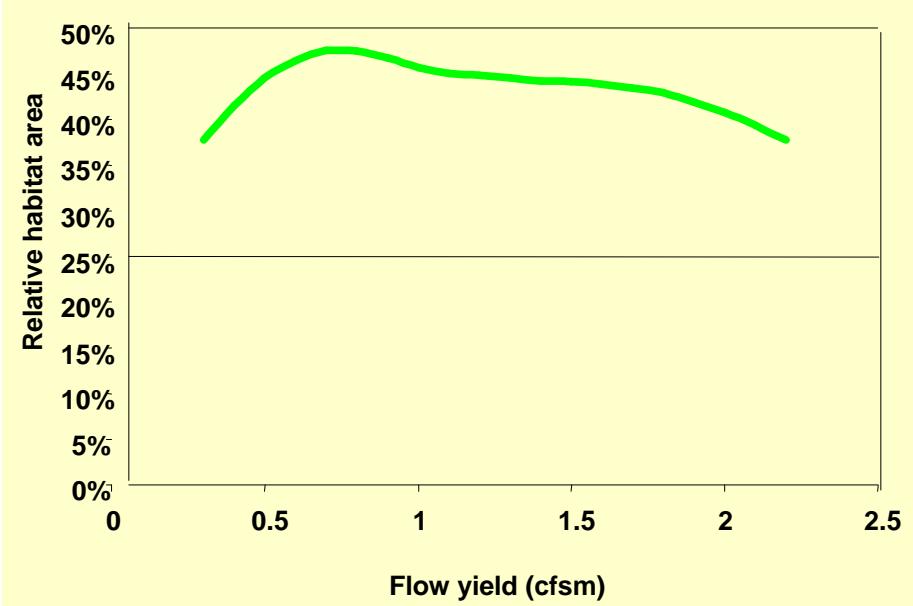


Simulation dam impacts



River corridor restoration in sites 7-10

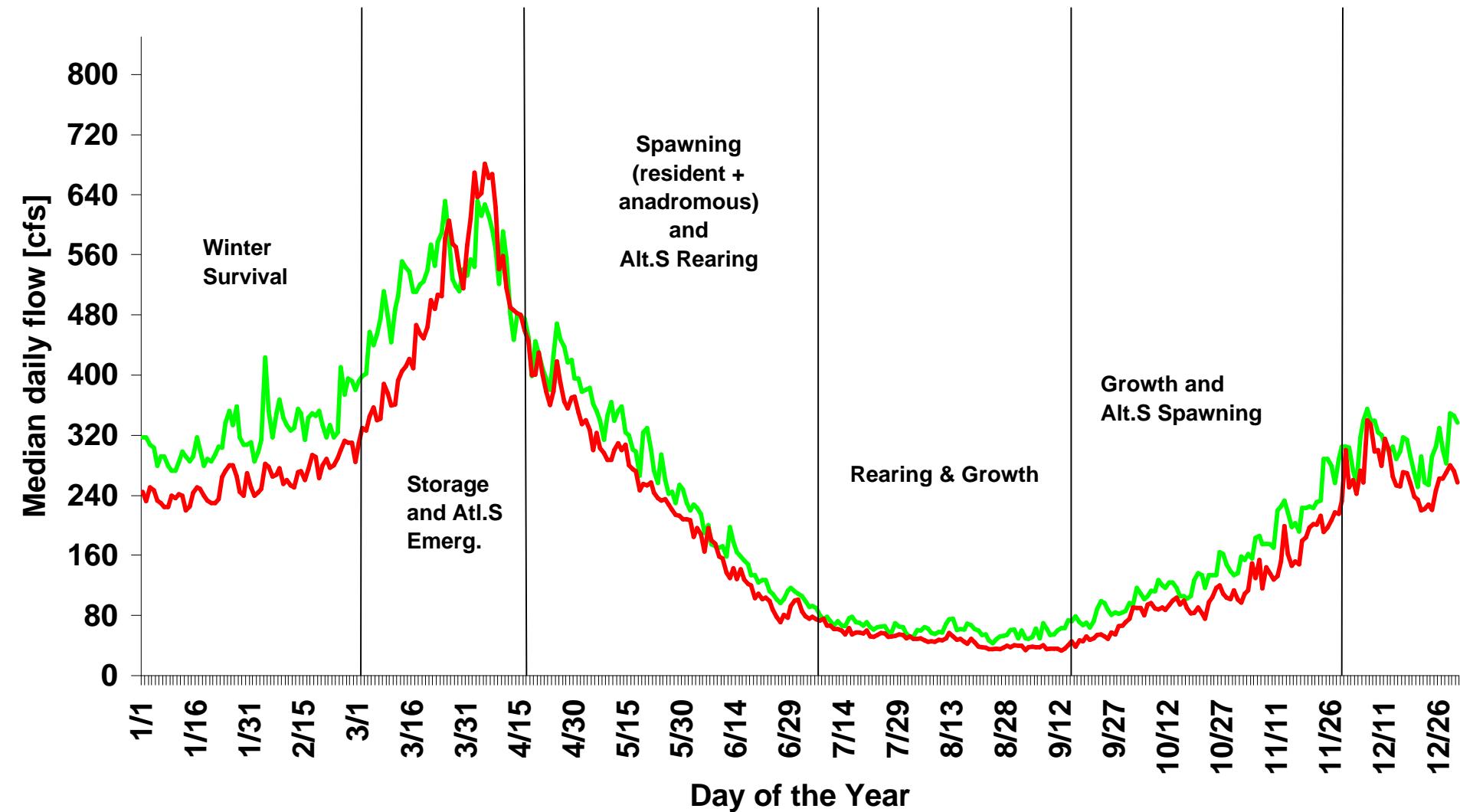




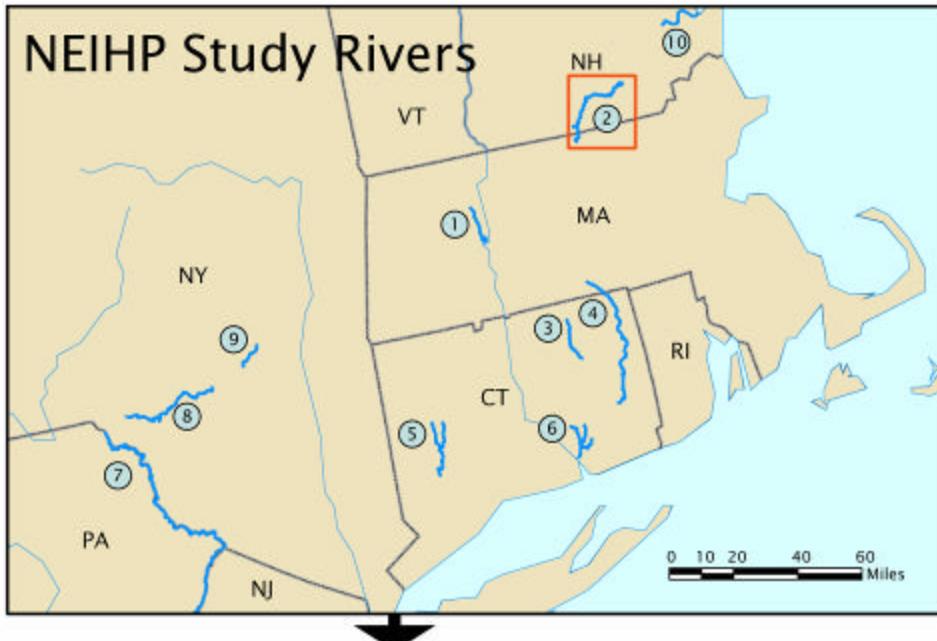
Reconstructed flow in biological periods

1948 - 1994

simulation measured



NEIHP Study Rivers



Project Location Key

- ① Mill River, Hatfield, MA
- ② Souhegan River, NH
- ③ Fenton River, CT
- ④ Quinebaug River, MA-CT
- ⑤ Pomperaug River, CT
- ⑥ Eightmile River, CT
- ⑦ Upper Delaware River, PA-NY
- ⑧ Beaver Kill, NY
- ⑨ Stony Clove Creek, NY
- ⑩ Lamprey River

2. Souhegan River Watershed

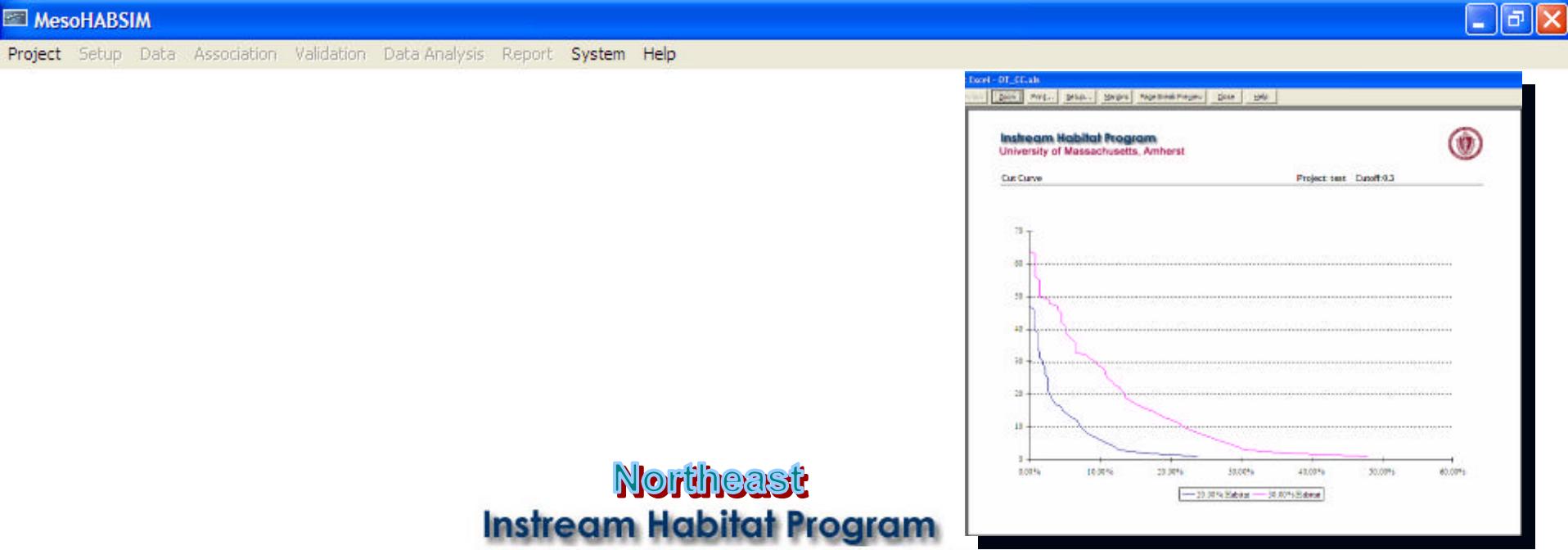


Souhegan HMU Mapping 0.5 cfsm

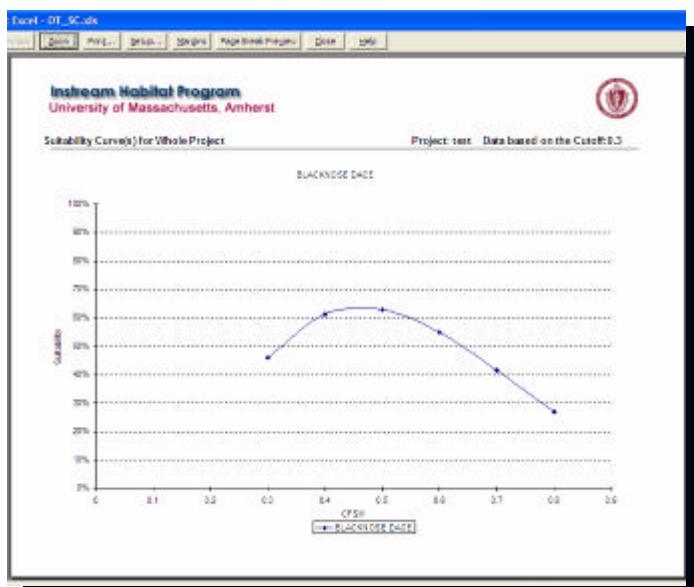
Legend

- BACKWATER
- CASCADE
- FASTRUN
- GLIDE
- PLUNGEPOOL
- POOL
- RAPIDS
- RIFFLE
- RUFFLE
- RUN
- SIDEARM





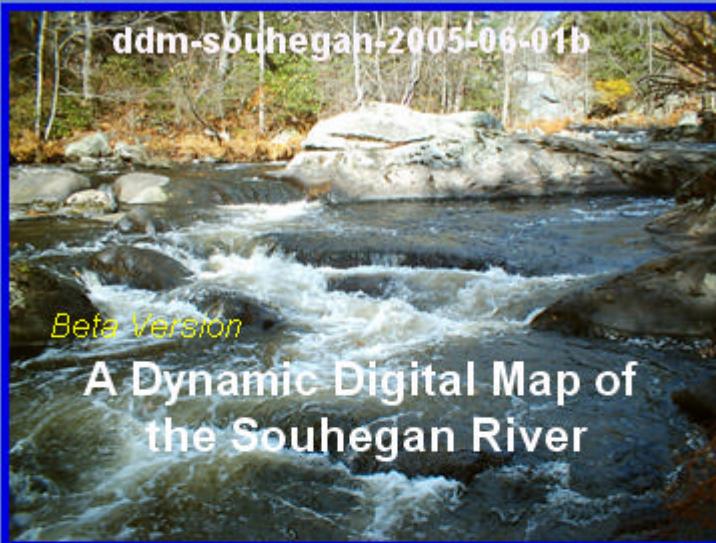
Northeast Instream Habitat Program University of Massachusetts, Amherst



Souhegan River Dynamic Digital Map Overview



■ Welcome to



Contributors and content:

Funding:

Dynamic map content adapted from
Northeast Instream Habitat Program
Souhegan River Project

Photos:

Open This DDM's Home Page Using Either:

WEB Access

or

Local Access

Portions © RunTime Revolution, Ltd. This application was created using Revolution and inserted
into the DDM-Template written by Chris Condit who was funded by NSF-DUE-CCLI grant #0127331

© Chris Condit & University of Massachusetts at Amherst

Although this program may have been used by the above contributors, no warranty, expressed or implied, is made by the them as to the accuracy and functioning of the program and related program material, nor shall the fact of distribution constitute any such warranty, and no responsibility is assumed by the contributors in connection therewith.

Open Program
Status Notes

Check for any updates of this DDM from:

<http://ddm.geo.umass.edu/ddm05/ddm-souhegan>

Dynamic Digital Map Home Screen

[Quit...](#)[Index of Images](#)[Index of Articles](#)[Index of Maps](#)[Index of Figures](#)[Thumbnails](#)[Find...](#)

Select a Thematic Map Type below,
and then click on
the area you want
to display.

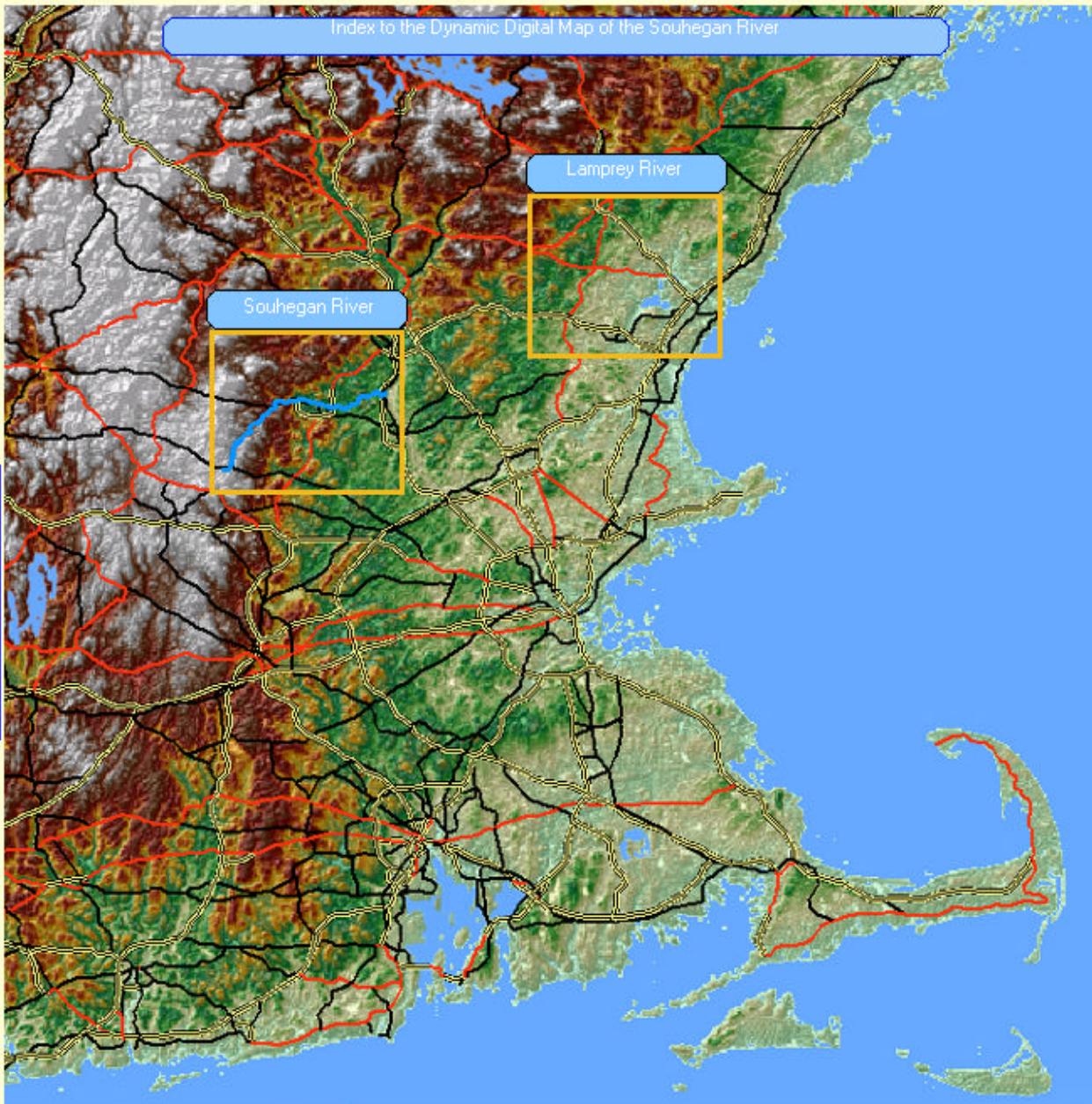
Select Map Type :

- DEM Map
- Orthophoto Map
- Topo Map

Beta
Version

[About DDM...](#)

Index to the Dynamic Digital Map of the Souhegan River

[Preferences and Set Up](#)

NORTHEAST
INSTREAM
HABITAT
PROGRAM
University of Massachusetts Amherst



Introduction
to DDMs

Dynamic Digital Map Home Screen

[Quit...](#)[Index of Images](#)[Index of Articles](#)[Index of Maps](#)[Index of Figures](#)[Thumbnails](#)[Find...](#)

Select a Thematic Map Type below, and then click on the area you want to display.

Select Map Type :

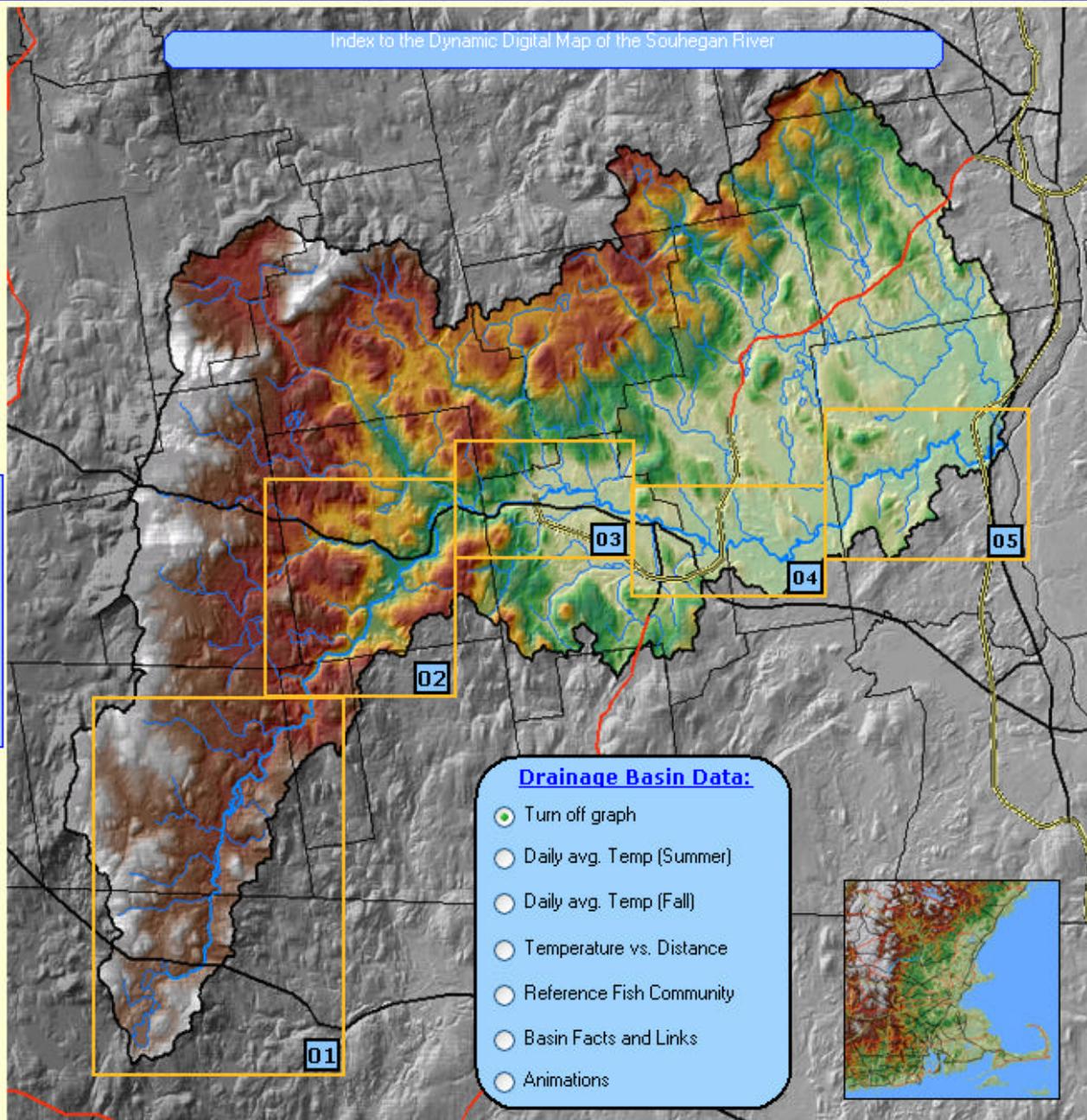
- DEM Map
- Orthophoto Map
- Topo Map

[Beta Version](#)[About DDM...](#)

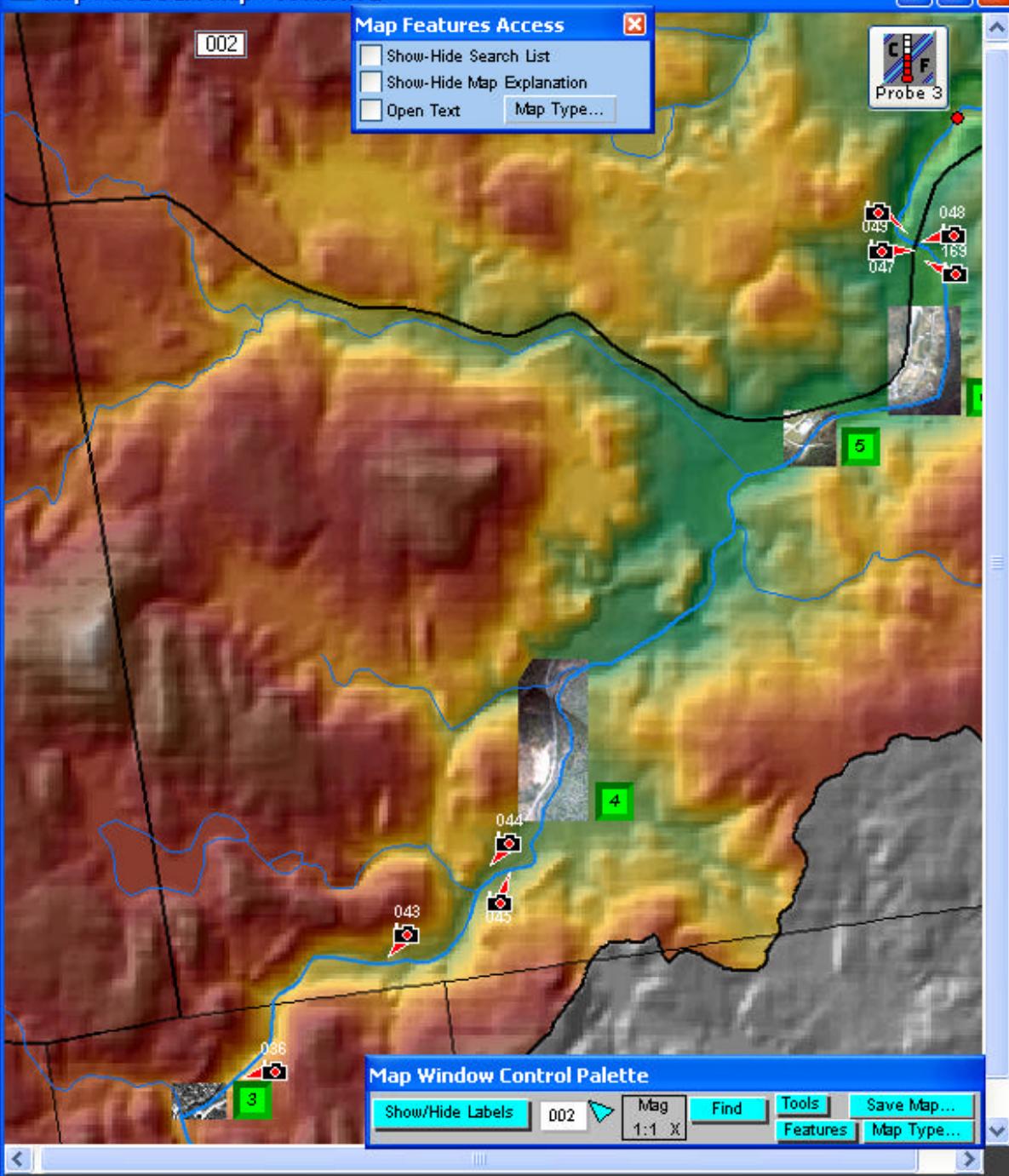
Index to the Dynamic Digital Map of the Souhegan River

[Preferences and Set Up](#)

NORTHEAST
INSTREAM HABITAT
PROGRAM
University of Massachusetts Amherst

[Introduction to DDMs](#)

Map #002 DEM Map - section02



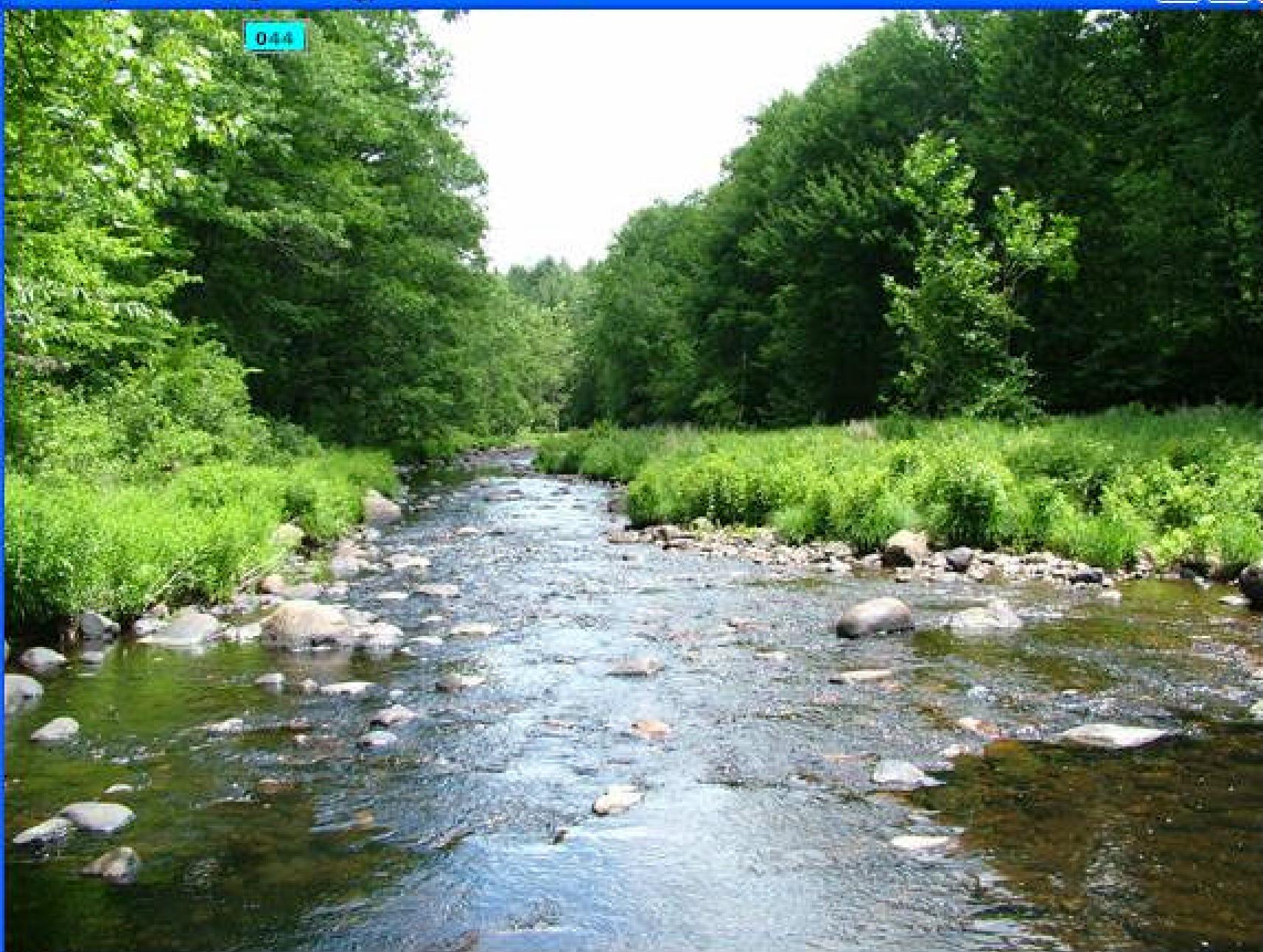
■ Image #003 Souhegan Mapping Site 3



■ Image #044 high energy riverbank area



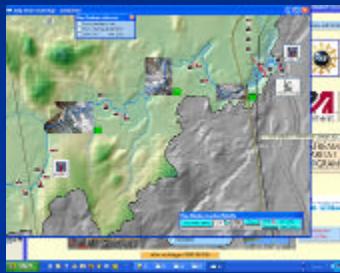
044



NEIHP plans



- **Research:** Integrate new technologies into instream science



- **Develop:** Models for resource management planning



- **Provide:** Project quality certification services



- **Training:** students and professionals