Conservation Status of Fish, Wildlife and Natural Habitats in the Northeast and Mid Atlantic Region

Mark Anderson and
Arlene Olivero Sheldon

Monitoring the Conservation of Fish and Wildlife in the Northeast

A Report on the Monitoring and Performance Reporting Framework for the Northeast Association of Fish and Wildlife Agencies

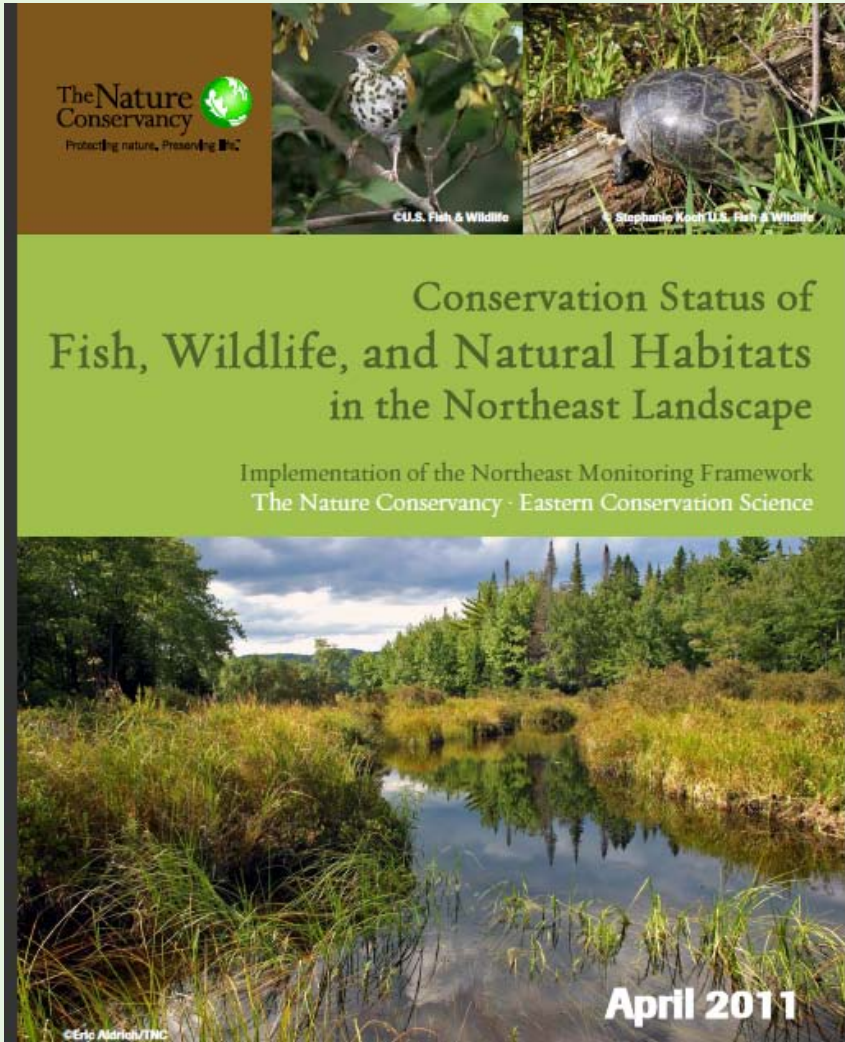Prepared and compiled by: Foundations of Success

FOUNDATIONS OF SUCCESS

Technical materials developed by state and federal wildlife agency staff and partners across the Northeast

September 2008

❖ Guiding Document

❖ Advisory Committee

❖ Secured Lands

❖ Habitats & Species

- Forest
- Wetland
- Unique habitats
- Rivers and Streams
- Lakes and Ponds
- SGCN Species.

Report and Advisory Committee

Conservation Status of Fish, Wildlife, and Natural Habitats in the Northeast Landscape

Implementation of the Northeast Monitoring Framework
The Nature Conservancy · Eastern Conservation Science

April 2011

http://conserveonline.org/workspaces/ecs/

Representatives from every State

- ❖ Jenny Dickson and Rick Jacobson of CT DEP;
- ❖ Robert Coxe and Kevin Kalasz of DE DFW;
- ❖ John O'Leary and Thomas O'Shea of MA DFW;
- ❖ Glenn Therres, Lynn Davidson, Scott Stranko, and
- ❖ Dana L. Limpert of MD DNR;
- ❖ George Matula and Sandy Ritchie of ME DIFW;
- ❖ Jim Oehler, John Kanter, Matt Carpenter, Steve Fuller,
- ❖ and John Tash of NH DFG;
- ❖ Dave Jenkins, Kris Schantz, and Miriam Dunne of NJ DFW,
- ❖ Tracey Tomajer, Greg Edinger, Dan Rosenblatt,
- ❖ and Erin White of NY DEC;
- ❖ Dan Brauning and Lisa Williams of PA GC,
- ❖ Dave Day of PA FBC,
- ❖ Jeffrey Wagner of PA WPC/NHP;
- ❖ Jon Kart and Rod Wentworth of VT DFW; Gary Foster of
- ❖ WV CNR; Becky Gwynn of VA DGIF,
- ❖ Dave Tilton, Genevieve Pullis LaRouche, Ron Essig,
- ❖ and Ken Sprankle of USFWS;
- ❖ Don Faber-Langendoen of NatureServe,
- ❖ Dan Lambert of American Bird Conservancy,
- ❖ Dave Chadwick of the AFWA, Mary Anne Theising of USEPA,
- ❖ James McKenna of USGS.
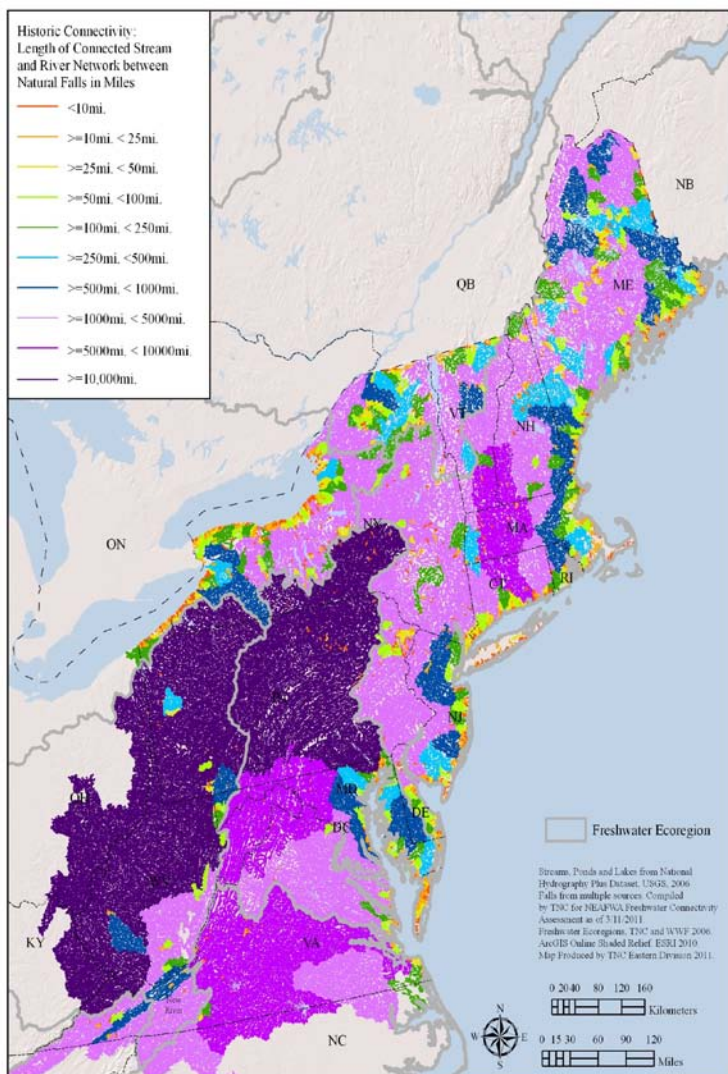
Example: Forests: Age Structure
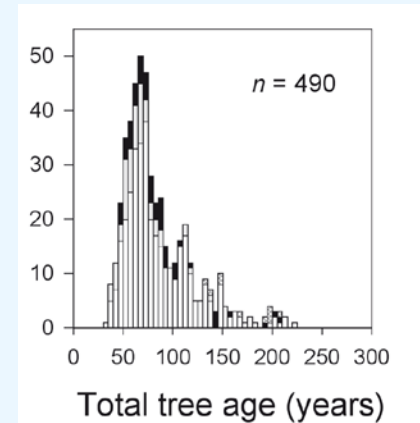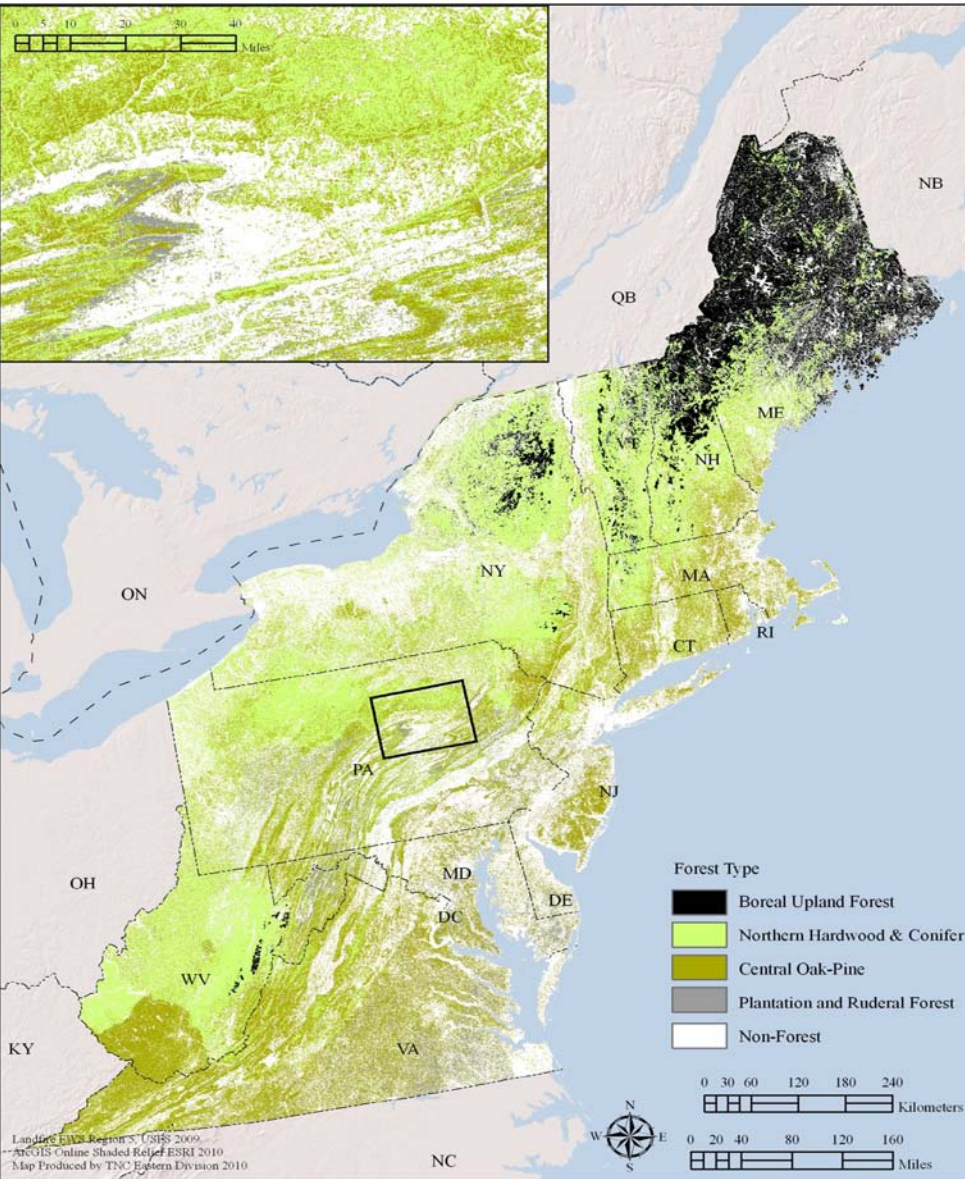
LANDFIRE MAP
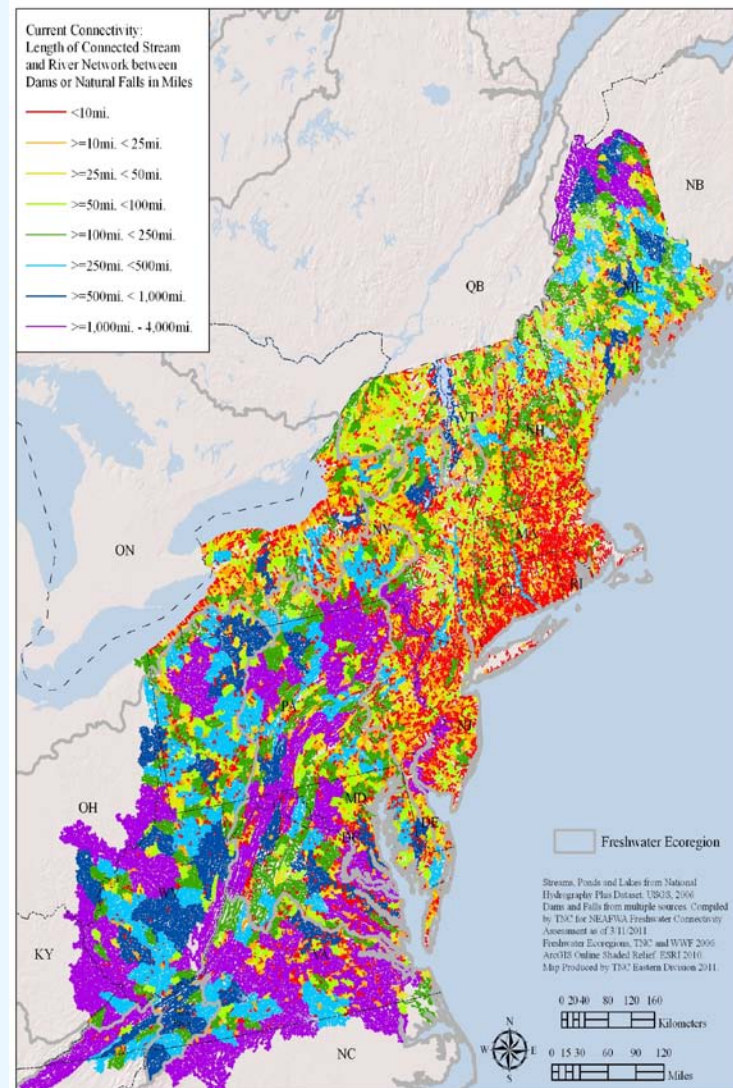FIA data
6952 stands
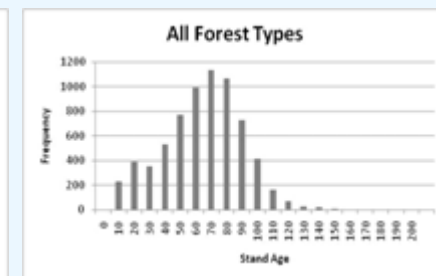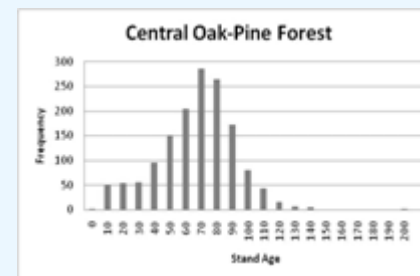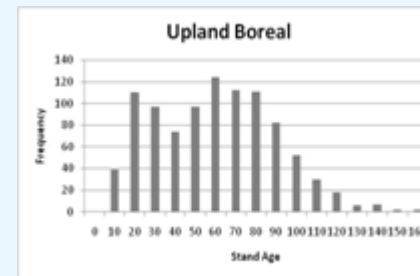
Example: Rivers: Connected Networks

Original State: falls only

Current State: falls and dams

Original = 41 % in networks over 5,000 miles
Current = 0 %

Original = 3 % in networks 1-25 miles
Current = 23 %

Example: Securement by Category

Concern trumps Responsibility?

Legend: % GAP 1-2 (green), % GAP 3 (yellow)

Chart (x-axis: 0% to 40%):
- Widespread Concern, Low Responsibility (80)
- Limited Distribution, High Responsibility (26)
- High Concern, Low Responsibility (36)
- High Concern, High Responsibility (5)
- Widespread Concern, High Responsibility (28)
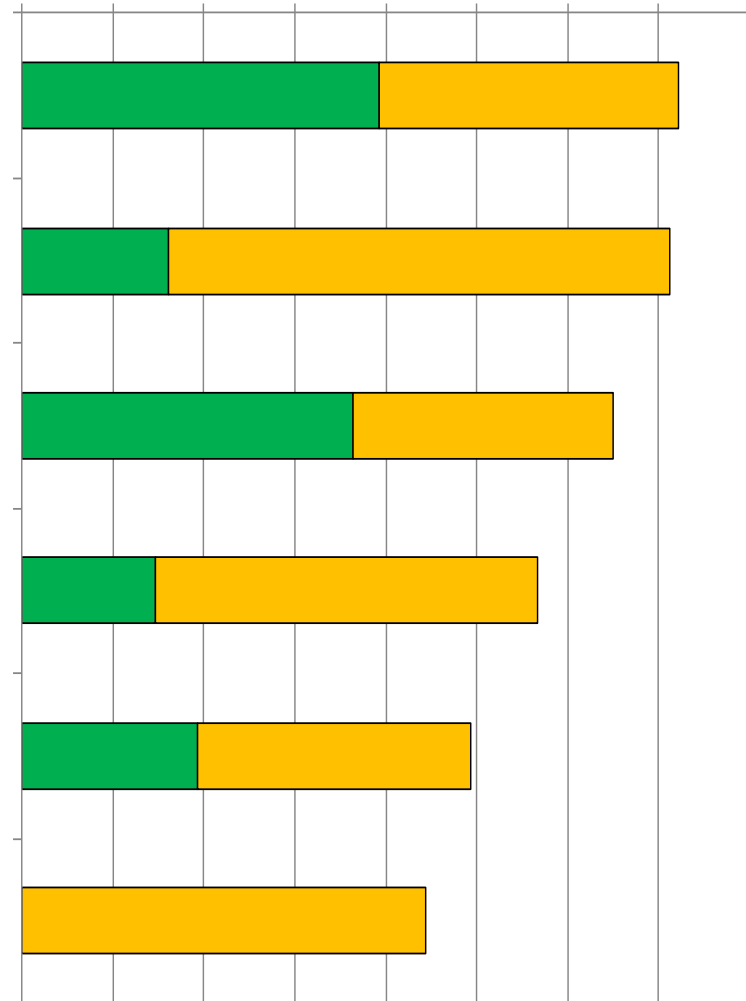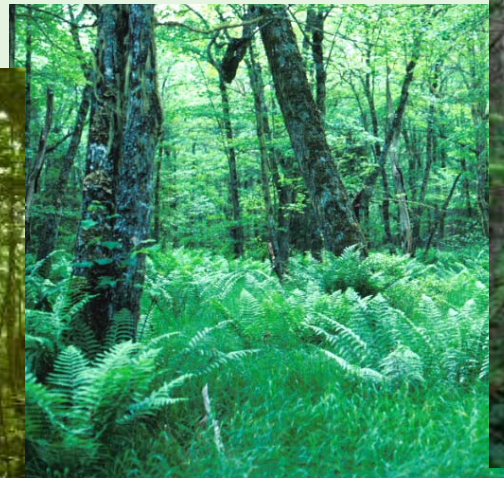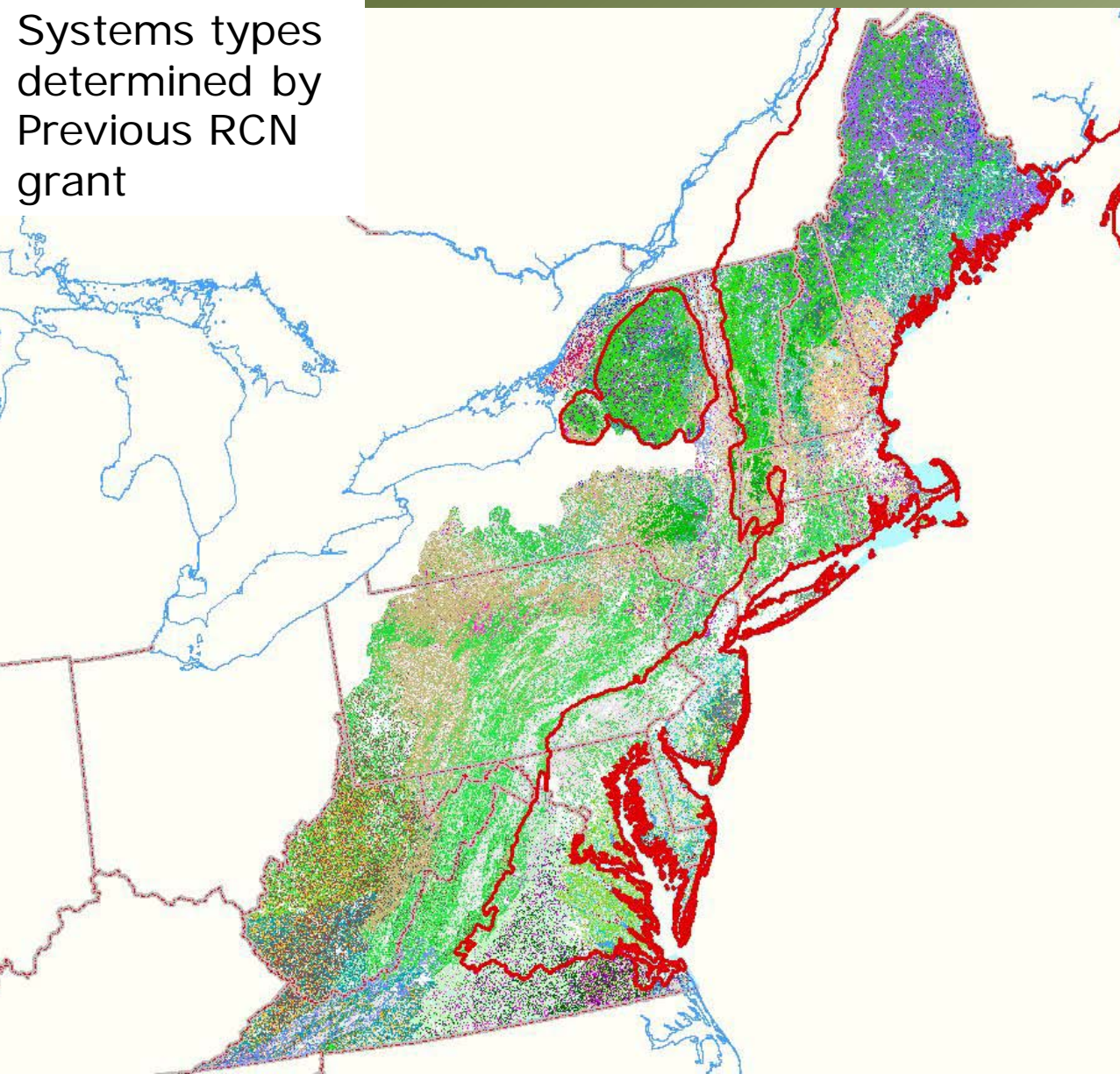- Moderate Concern, High Responsibility (2)

each

Terrestrial Habitats

Systems types determined by Previous RCN grant

Ecological Systems/Habitats: Wetland, U

- Laurentian-Acadian Conifer-Hwd Acid Swamp
- N-Central Appalachian Acidic Swamp
- Laur-Acad Alkaline Conifer-Hwd Swamp
- Laurentian-Acadian Freshwater Marsh
- Laur-Acad Wet Meadow-Shrub Swamp
- Boreal-Laur-Acadian Acidic Basin Fen
- N-Central Interior and Appal Acidic Peatland
- N-Central Int Wet Flatwoods (wet Clayplain Forest)
- Acadian Coastal Salt Marsh & Estuary Marsh
- Acadian Maritime Bog
- Boreal-Laurentian Bog
- Laurentian-Acadian Floodplain Forest
- Eastern Boreal Floodplain

- SP system: N Appal-Acad Rocky Heath Outcrop
- SP system: Laur-Acad Calcareous Rocky Outcrop
- SP/LP system: Central Appal Dry Oak-Pine Forest
- SP system: Central App Pine-Oak Rocky Woodland
- SP system: L-A Acidic Cliff &Talus
- SP system: L-A Calcareous Cliff & Talus
- SP system: N-Central Appal Acidic Cliff &Talus
- SP system: N-Central Appal Circumneut Cliff &Talus
- SP system: NE Interior Pine Barrens
- LP/SP system: Great Lakes Alvar
- LP/SP system: Laurentian Acidic Rocky Outcrop
- SP system: Great Lakes Dune: 4 small occ's

- SP/LP system: Acadian-Appalachian Alpine Tundra
- Mtx system: Acad-Appal Montane Spr-Fir-Hwd Forest
- LP/SP system: Acadian Sub-boreal Spruce Flat
- Mtx system: Acadian Low-Elev Spr-Fir-Hwd Forest
- Mtx system: L-A N. Hwd Forest, typic
- Mtx system: L-A N. Hwd Forest, high conifer
- Mtx system: L-A Red Oak-N. Hwd Forest
- Mtx system: L-A N. Hwd Forest, moist/cool
- Mtx system: L-A Pine-Hem-Hwd Forest, typic
- Mtx system: L-A Pine-Hem-Hwd Forest, moist/cool
- LP/SP system: Appal Hem-N. Hwd Forest, typic
- LP/SP system: Appal Hem-N. Hwd Forest, moist/cool
- LP/SP system, former mtx: Mesic Clayplain Forest

- NLCD-NHD open water
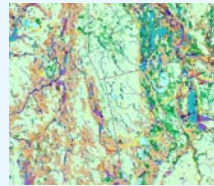- NLCD agricultural classes 81-82
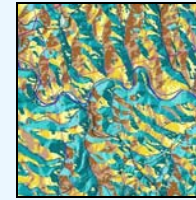- NLCD developed classes 21-24 & 31
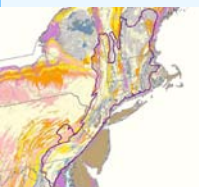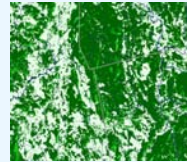
Data Driven:
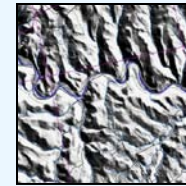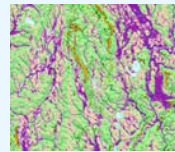## Wall to wall grids and confirming points
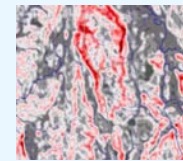
Elevation

NWI Wetland

Categorical Aspect

Geology

Canopy closure
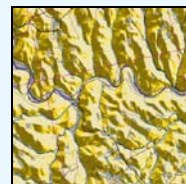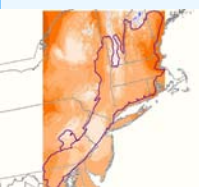
Shaded Relief

Landcover

Landforms

Rugosity

Solar radiation

Aspect

Over 10,000 FIA and NHP data points

Precipitation

UPLAND

SP system: Acad-Appal Montane Spruce-Fir-Hwd Forest: 201.566
SP system: Central App Pine-Oak Rocky Woodland: 202.600
SP system: N Appal-Acad Rocky Heath Outcrop: 201.571
SP system: Eastern Serpentine Woodland: 202.347
SP system: L-A Acidic Cliff and Talus: 201.569
SP system: L-A Calcareous Cliff & Talus: 201.570
SP system: N-Central Appal Acidic Cliff and Talus: 202.601
SP system: N-Central Appal Circumneut Cliff & Talus: 202.603
SP system: NE Interior Pine Barrens: 202.590

mtx system: Appal Hem-N. Hwd Forest, drier
mtx system: Appal Hem-N. Hwd Forest, moist/cool
mtx system: Appal Hem-N. Hwd Forest, typic
mtx system: Central Appal Dry Oak-Pine Forest
mtx system: Laurentian-Acadian N. Hwd Forest, moist/cool
mtx system: Laurentian-Acadian N. Hwd Forest, typic
mtx system: Laur-Acad Pine-Hem-Hwd Forest, moist/cool
mtx system: Laur-Acad Pine-Hem-Hwd Forest, typic
mtx system: NE Coastal & Interior Pine-Oak Forest
mtx system: NE Interior Dry-Mesic Oak Forest, moist/cool
mtx system: NE Interior Dry-Mesic Oak Forest, typic

Water
Developed
Agriculture

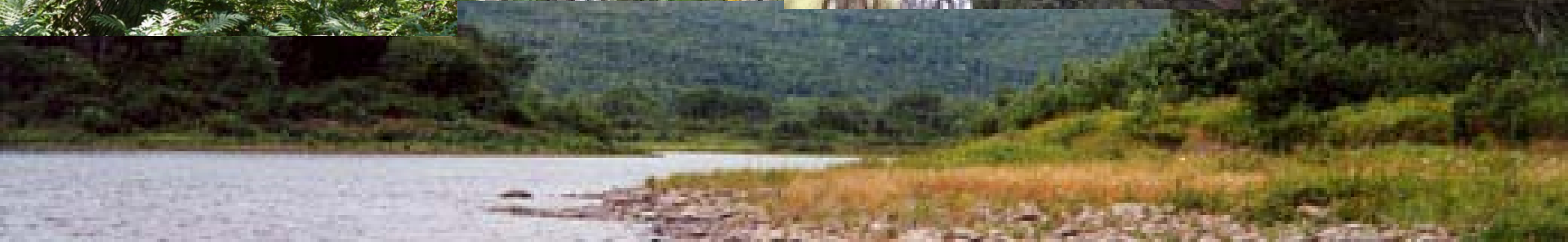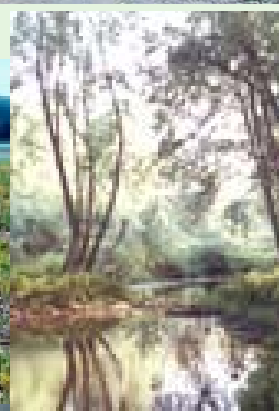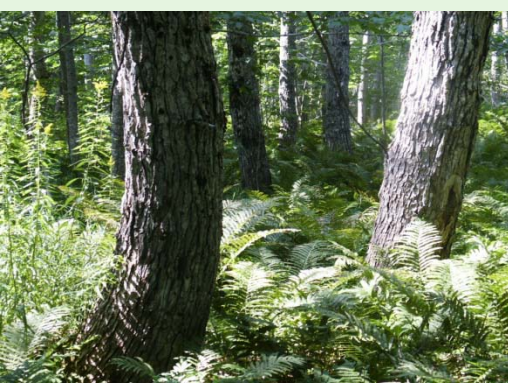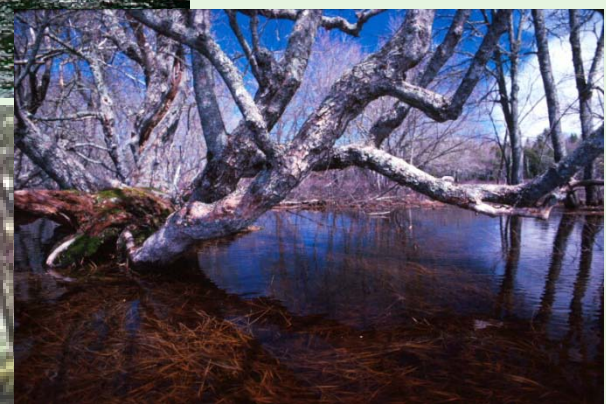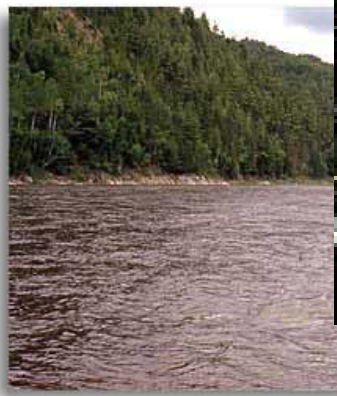Underlying
patterns
Related to physical
Features.

WETLAND
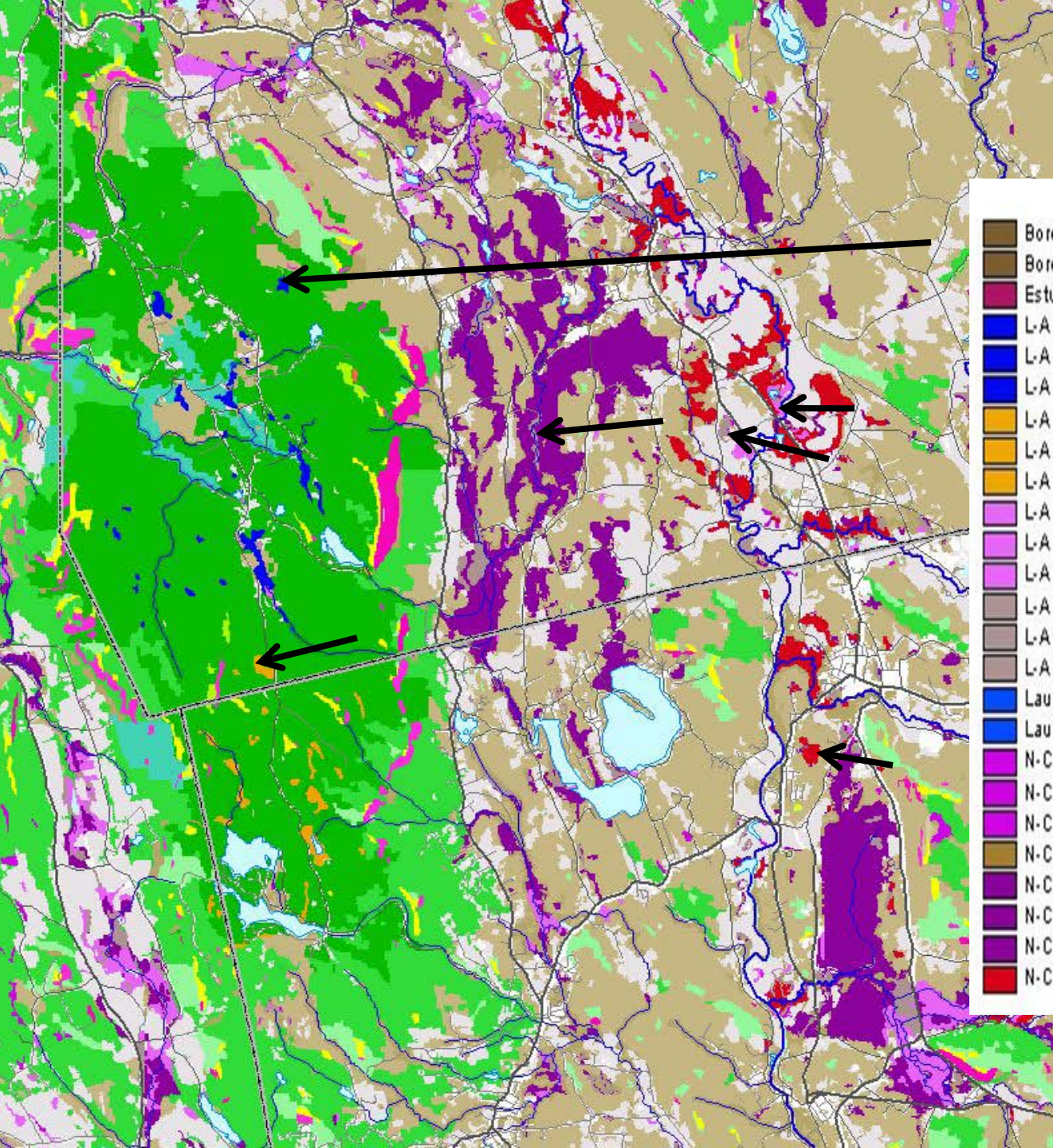
Boreal-Laurentian-Acadian Acidic Basin Fen: isolated
Boreal-Laur-Acad Acidic Basin Fen: smaller stream riparian
Estuarine units (185) along brackish shores in NY/NJ/MD
L-A Alkaline Conif-Hwd Swamp: bigger river fldpln
L-A Alkaline Conif-Hwd Swamp: isolated
L-A Alkaline Conif-Hwd Swamp: smaller stream riparian
L-A Conif-Hwd Acid Swamp: bigger river fldpln
L-A Conif-Hwd Acid Swamp: isolated
L-A Conif-Hwd Acid Swamp: smaller stream riparian
L-A Freshwater Marsh: bigger river fldpln
L-A Freshwater Marsh: isolated
L-A Freshwater Marsh: smaller stream riparian
L-A Wet Meadow-Shrub Swamp: bigger river fldpln
L-A Wet Meadow-Shrub Swamp: isolated
L-A Wet Meadow-Shrub Swamp: smaller stream riparian
Laur-Acad Akaline Fen: isolated
Laur-Acad Akaline Fen: smaller stream riparian
N-Central Appal Acidic Swamp: bigger river fldpln
N-Central Appal Acidic Swamp: isolated
N-Central Appal Acidic Swamp: smaller stream riparian
N-Central Int and Appal Acidic Peatland
N-Central Int and Appal Rich Swamp: bigger river fldpln
N-Central Int and Appal Rich Swamp: isolated
N-Central Int and Appal Rich Swamp: smaller stream riparian
N-Central Interior Wet Flatwoods

Mapping Rivers Systems

Key Habitat Variables

SIZE (Drainage Area)

Size Classes:
- Headwaters: 0<3.861
- Creeks: >=3.861<38.61
- Small Rivers: >=38.61<200
- Medium Tributary Rivers: >=200<1000
- Medium Mainstem Rivers: >=1000<3861
- Large Rivers: >=3861<9653
- Great Rivers: >=9653
- Lakes
- States
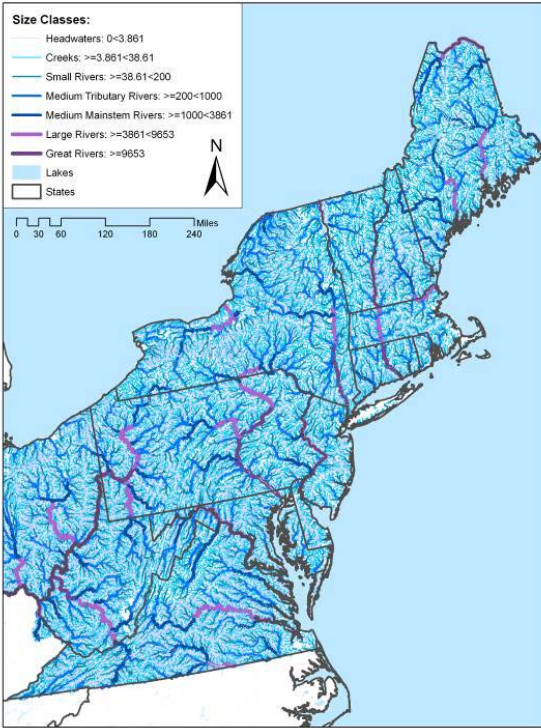
Temperature
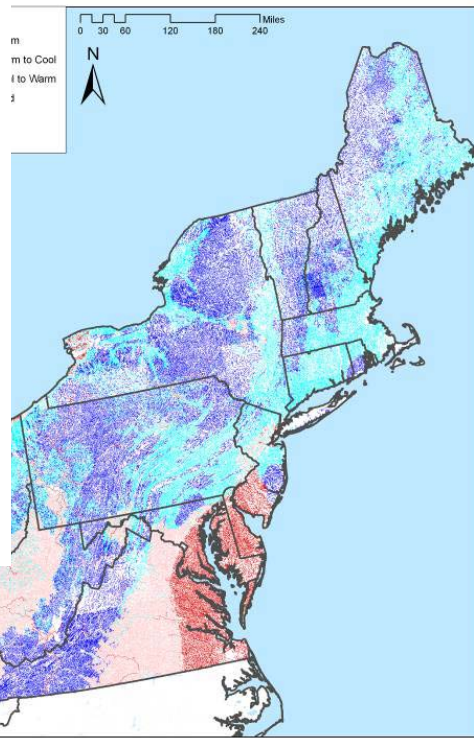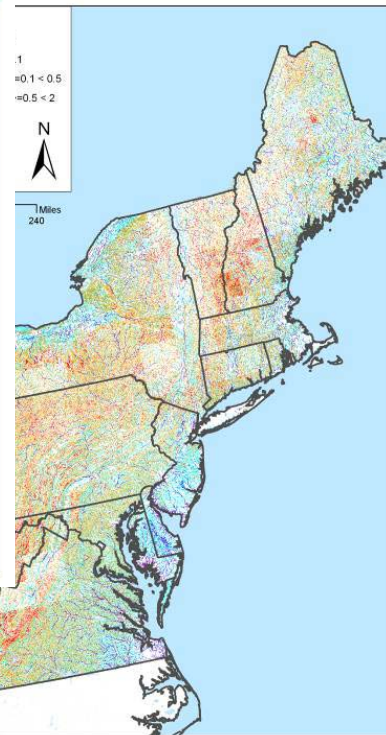
Gradient

Geology (pH)
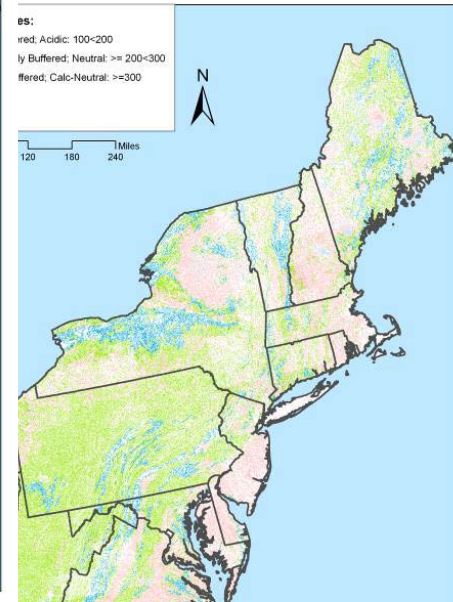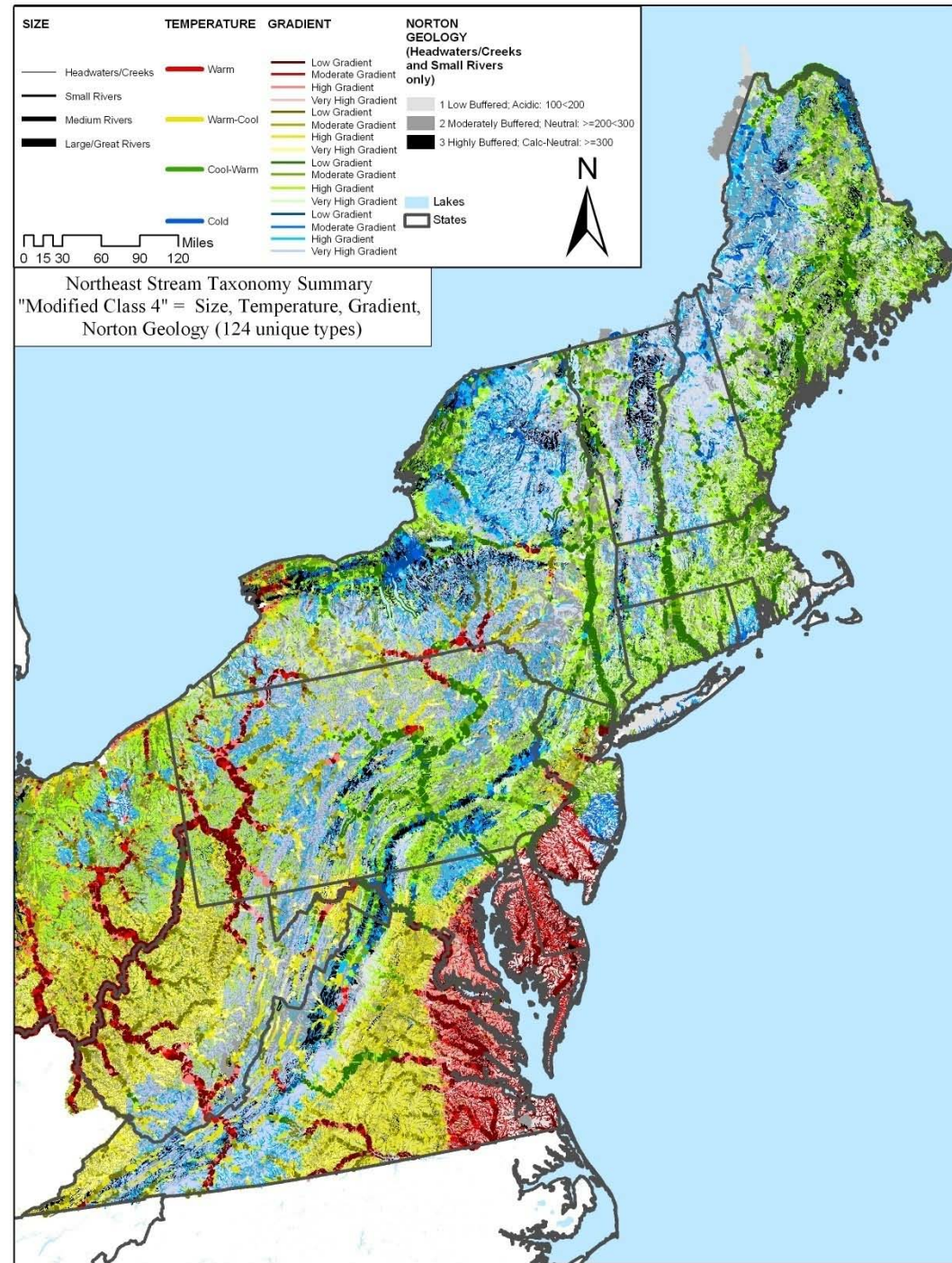
Results
NEAFWA Stream Classification includes 257 types,

This simplified map groups them into 96 types.

From
Very high gradient, acidic, cold headwater creek
(1a_6_1_1)

To
Very low gradient, calcareous, warm Great River
(5_1_3_3)

Code =
Size, Gradient, Geo, Temp

Northeast Stream Taxonomy Summary
"Modified Class 4" = Size, Temperature, Gradient, Norton Geology (124 unique types)

High gradient acidic cold headwater stream.
Regional Size Class (1b): Northeast Headwaters

Regional Gradient Class

(5): High

Regional Norton Geology Class

(1): Low Buffering Capacity, Acidic

Regional Temperature Class

(1): Cold

Creeks (4-38 sq.mi.) High and Very High Gradient Cold Acidic
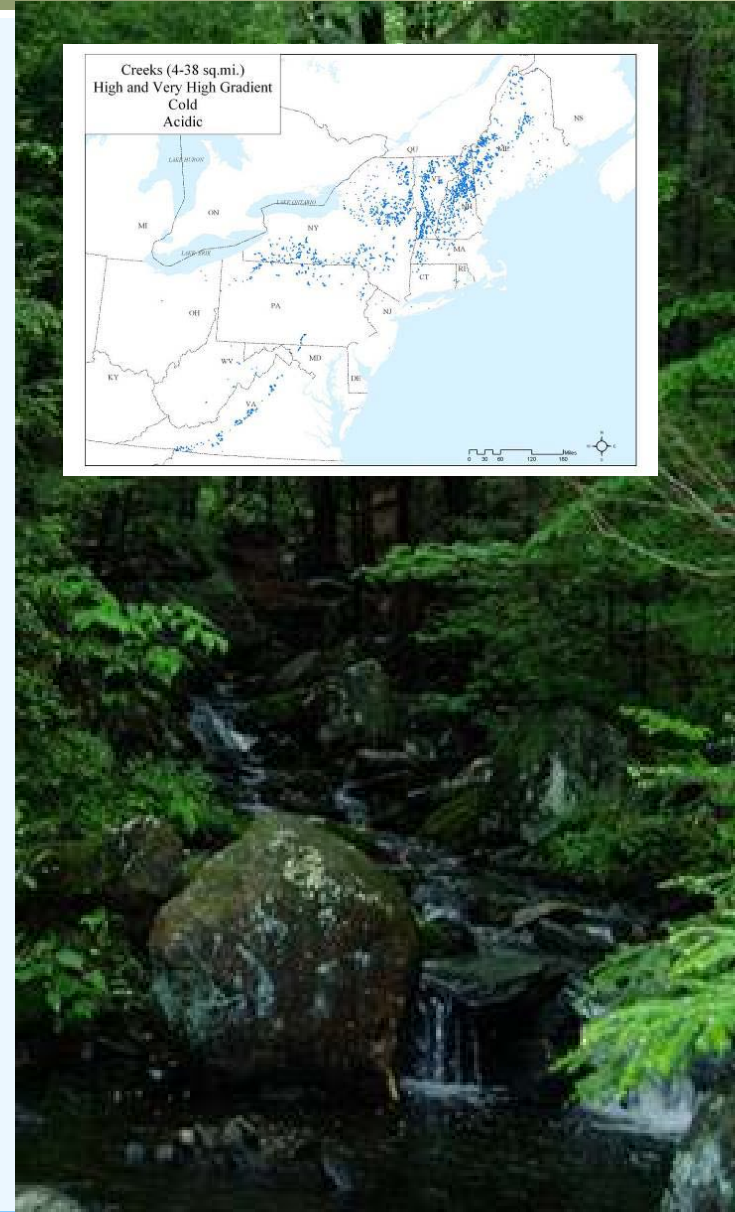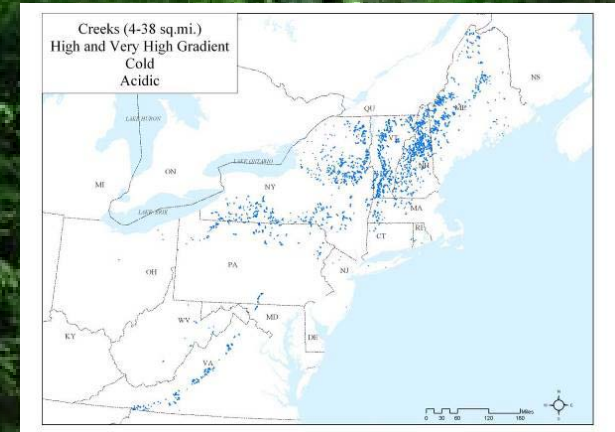
1b511:

High gradient acidic cold headwater stream

Linked State Names:

MA Small Streams,

VT Cold headwater acidic streams,

NY Coldwater Stream,

CT Coldwater Stream,

NEAFWA Aquatic Connectivity

Colin Apse & Erik martin,

The nature conservancy

Purpose

This project endeavors to produce a tiered list of dams in the Northeast US based on their potential ecological benefit if remediated for fish passage, and develop a tool that allows managers to re-rank dams at multiple spatial scales

Montsweag Brook, ME, before Montsweag Dam removal

Montsweag Brook after. Photos by Dan Creek

❖ Dams and other barriers to the free movement of fish and other aquatic organisms have had a negative impact on the health and viability of these populations for well over a century in the eastern United States.

❖ Removing or otherwise mitigating dams can improve the health of aquatic ecosystems and allow fish populations to recover.

❖ Given the financial and organizational obstacles to dam removal projects, it is critical that managers focus their efforts and resources where they can have the greatest ecological impact.

Methods

❖ **Data Collection & Preparation**

- Dams, waterfalls, anadromous fish habitat collected from states & other sources, processed, iteratively reviewed with state contacts

❖ **Metrics calculated in GIS for every dam. Metrics grouped in 5 categories. The Barrier Analysis Tool (BAT), an ArcGIS plug-in developed for this project, was used to calculate many of the metrics.**

- Connectivity Status

- Connectivity Improvement

- Watershed & Local Condition

- Ecological

- Size Class

Status & Utility

- ❖ 2nd draft of results are currently being reviewed by state workgroup participants

- ❖ Final results: end of August

- ❖ Potential utility of results (as suggested by workgroup participants)

  - Project evaluation

  - Communicating with owners/funders

  - Grant writing

  - Justifying projects during funding allocation

  - Bring attention to new projects that may not have been looked at before

  - Developing basin-level plans

DRAFT Anadromous Results

- ● Top 5%
- ● 2nd 5%
- ● 3rd 5%
- ● 4th 5%
- ● 5th 5%
- ● 6th 5%
- ● 7th 5%
- ● 8th 5%
- ● 9th 5%
- ● 10th 5%
- ● 11th 5%
- ● 12th 5%
- ● 13th 5%
- ● 14th 5%
- ● 15th 5%
- ● 16th 5%
- ● 17th 5%
- ● 18th 5%
- ● 19th 5%
- ● 20th 5%