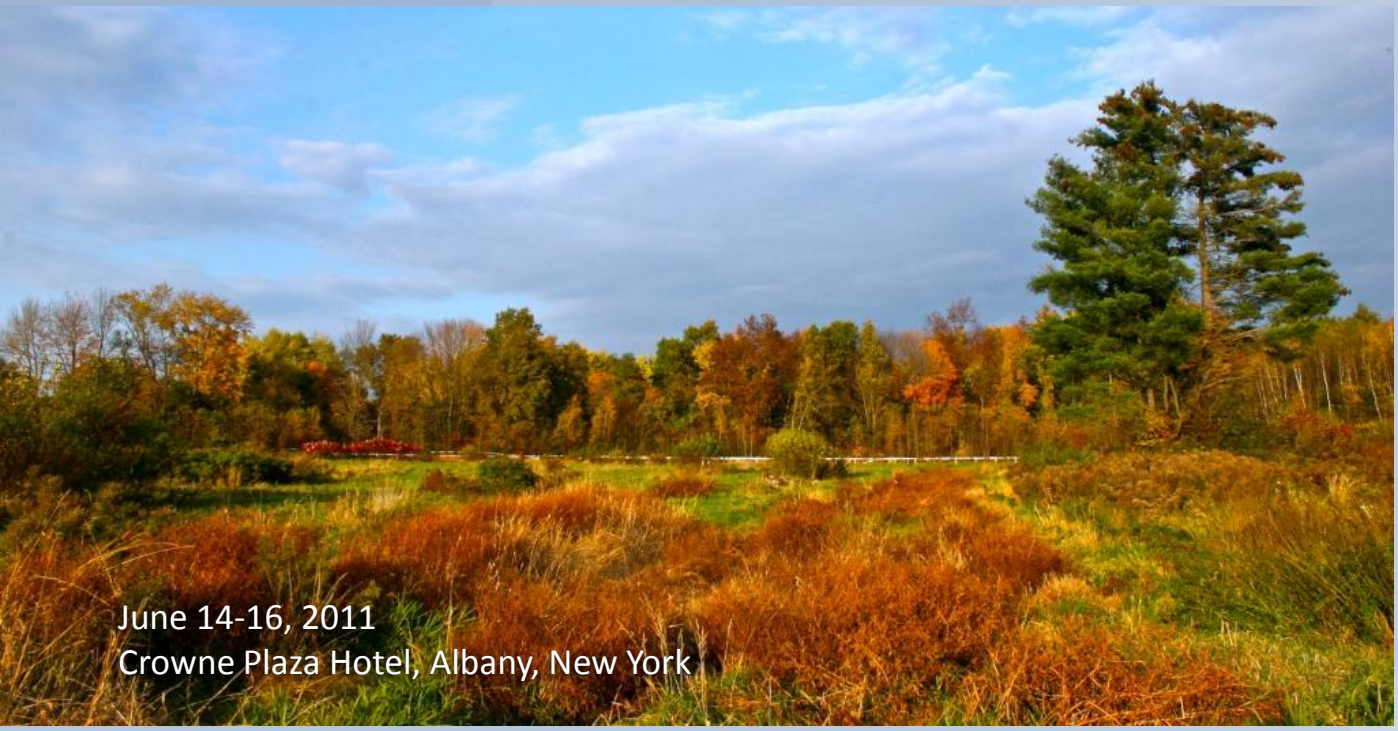
Northeast Regional Conservation Framework Workshop

"Albany II"



Hosted by

Northeast Association of Fish & Wildlife Agencies

North Atlantic Landscape Conservation Cooperative

Photo Credit: James Weliver/USFWS

Session 3: Biological Assessment and Goal Setting

Session Hosts: Andrew Milliken and Dave Day
Additional Presenters: Mark Anderson, Hector Galbraith

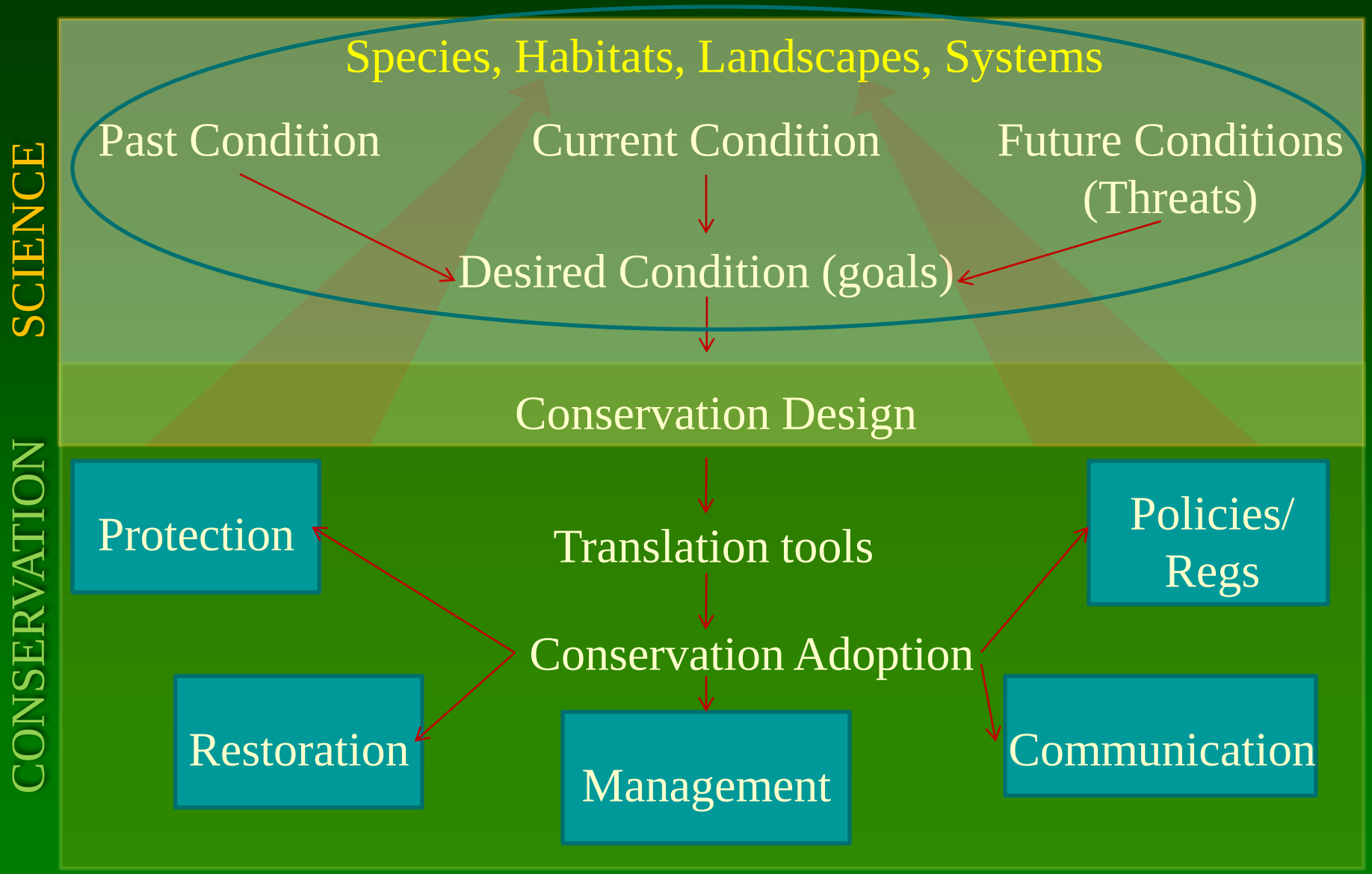
Session Objectives:

1. Understand completed, ongoing and proposed biological assessment projects, how they can be used, and how they fit into the framework;

2. Understanding of need for establishing population objectives and other common conservation goals;

3. Identification of priority biological assessment needs.

Conservation Framework



Biological Assessment and Goal-Setting – Tasks

Biological Assessment:

- Compile, organize and provide information on status, trends, threats and limiting factors for priority fish, wildlife and plant species
- Assess species relationships to habitats and landscapes

Goal-Setting: Agree on regional objectives

Priorities (triage): Assess those species and issues demanding immediate attention

Northeast Conservation Framework

GOAL-SETTING

Which species to conserve?
At what levels?
Who decides?

BIOLOGICAL ASSESSMENT

What do we know about the status of priority wildlife?

PRIORITIES

Which species demand immediate attention?

INFORMATION MANAGEMENT

How will we manage the demand for and creation of data?

CONSERVATION DESIGN

What should landscapes look like to conserve all species at levels that society wants?

SCIENCE TRANSLATION TOOLS

How do we make science solutions useful?

CONSERVATION ADOPTION

How do we get communities and landowners engaged in conservation?

MONITORING, EVALUATION, RESEARCH

What new information will we gather to support conservation?

CONSERVATION DELIVERY

How will we most efficiently put conservation on the ground?

Relationship to the Framework

- Biological Assessment depends upon other components of the framework:
  - Monitoring and Research provide basic information
    - e.g. Northeast coordinated bird monitoring
  - Habitat mapping and Information Management provide baseline information for consistent assessment
    - e.g. Northeast terrestrial and aquatic classification and maps
  - Information Management is needed to make existing information available and organize and disseminate the results of assessment

Relationship to the Framework

- Biological Assessment informs other components of the framework:
  - Conservation design:
    - Species-habitat models for landscape designs
    - Population-based habitat objectives
    - Area responsibility for species and habitats
  - Monitoring Research and Evaluation
    - Conservation targets

RCN Topics and Projects Encompassed

- **Regional Indicators and Measures (RCN Topic 6)**
  - Conservation Status of Key Habitats and SGCN in the Eastern Region (RCN 2007-5)
- **Impact of Climate Change on Northeast SGCN (RCN Topic 8)**
  - Assessing the Impacts of Climate Change on SGCN (RCN 2009-1)
- **Geospatial Condition Analysis (RCN Topic 10)**
  - Geospatial Condition Analysis of Northeast Habitats Based on the Northeast SGCN Habitat Maps (RCN 2009-2)
- **Development of Instream Flow Standards, Guidelines & Policies (formerly RCN Topic 3)**
  - Instream Flow for Great Lakes Basin of NY and PA (RCN 2010-2)
- **Landscape Scale Habitat Initiatives (formerly RCN Topic 7)**
  - Northeast Regional Connectivity Assessment Project (RCN 2007-2) PI: Erik Martin and Colin Apse, The Nature Conservancy
- **Identify and Assess Threats to SGCN (RCN Topic 7)**
- **Factors in Regional Decline of SGCN (RCN 12)**

LCC Projects

- Designing Sustainable Landscapes for Wildlife in the North Atlantic Landscape Conservation Cooperative (NA LCC) – in part
- Forecasting changes in aquatic systems and resilience of aquatic populations in the North Atlantic Landscape Conservation Cooperative (NA LCC) – in part
- Evaluating the Vulnerabilities of Ecological Resources to Climate Change in the Northeast (NA LCC through RCN)
- Selecting Representative Species for Cons. Planning (FWS/NA LCC)
- Full Life Cycle Vulnerability Assessments for the Birds of the Upper Midwest Great Lakes Region (UMGL LCC)
- Distribution and Abundance of Breeding Birds in the Upper Midwest and Great Lakes Region as Influenced by Climate and Land Cover Change (UMGL LCC)

Example projects

- Conservation Status of Key Habitats and SGCN
- Regional Vulnerability Assessment
- Representative Species
- Designing Sustainable Landscapes
- Recommendations for Sustainable Flows in the Great Lakes Basin
- Salmonid Population Persistence

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

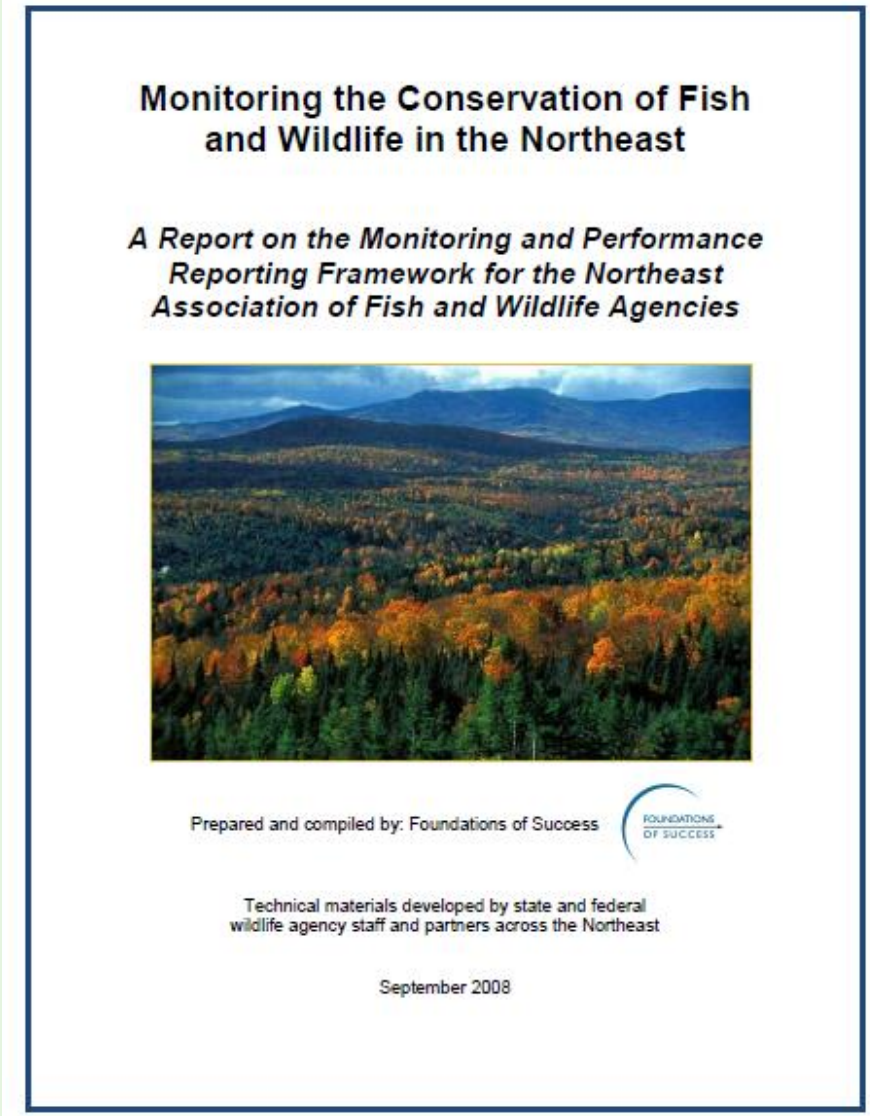
Mark Anderson and
Arlene Olivero Sheldon





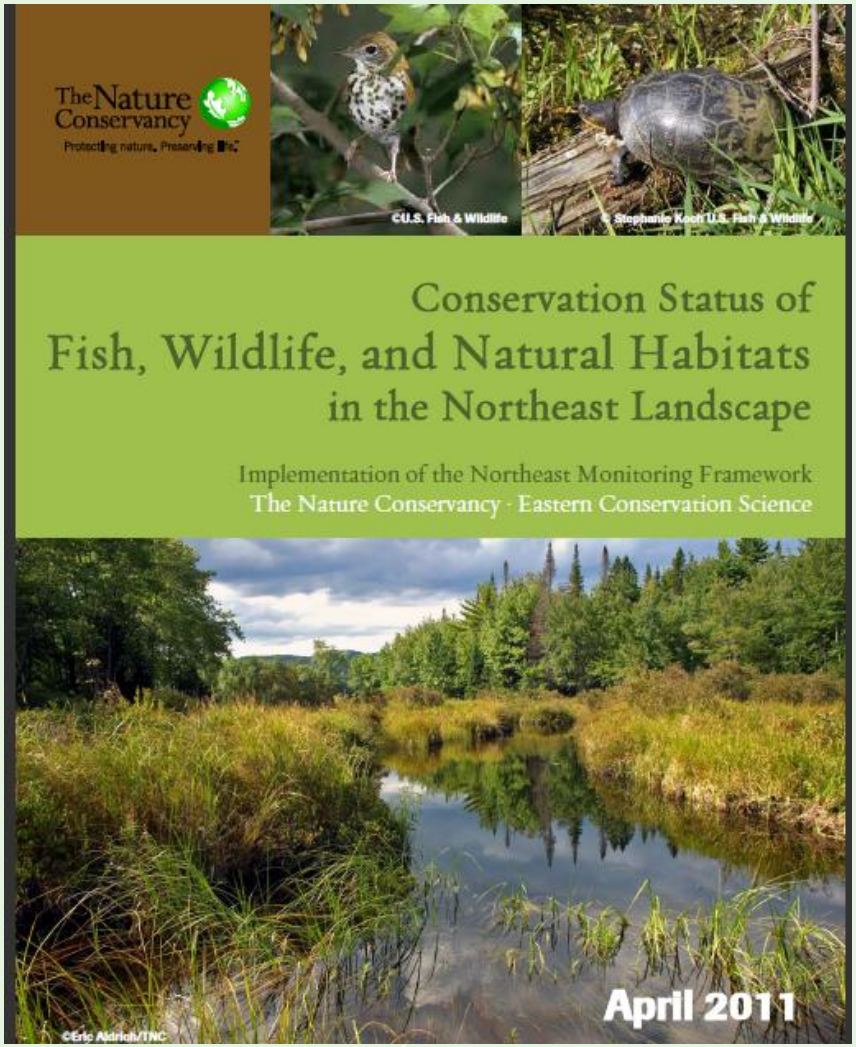


Project Overview



- Guiding Document
- Advisory Committee
- Secured Lands
- Habitats & Species
  - Forest
  - Wetland
  - Unique habitats
  - Rivers and Streams
  - Lakes and Ponds
  - SGCN Species.

Report and Advisory Committee

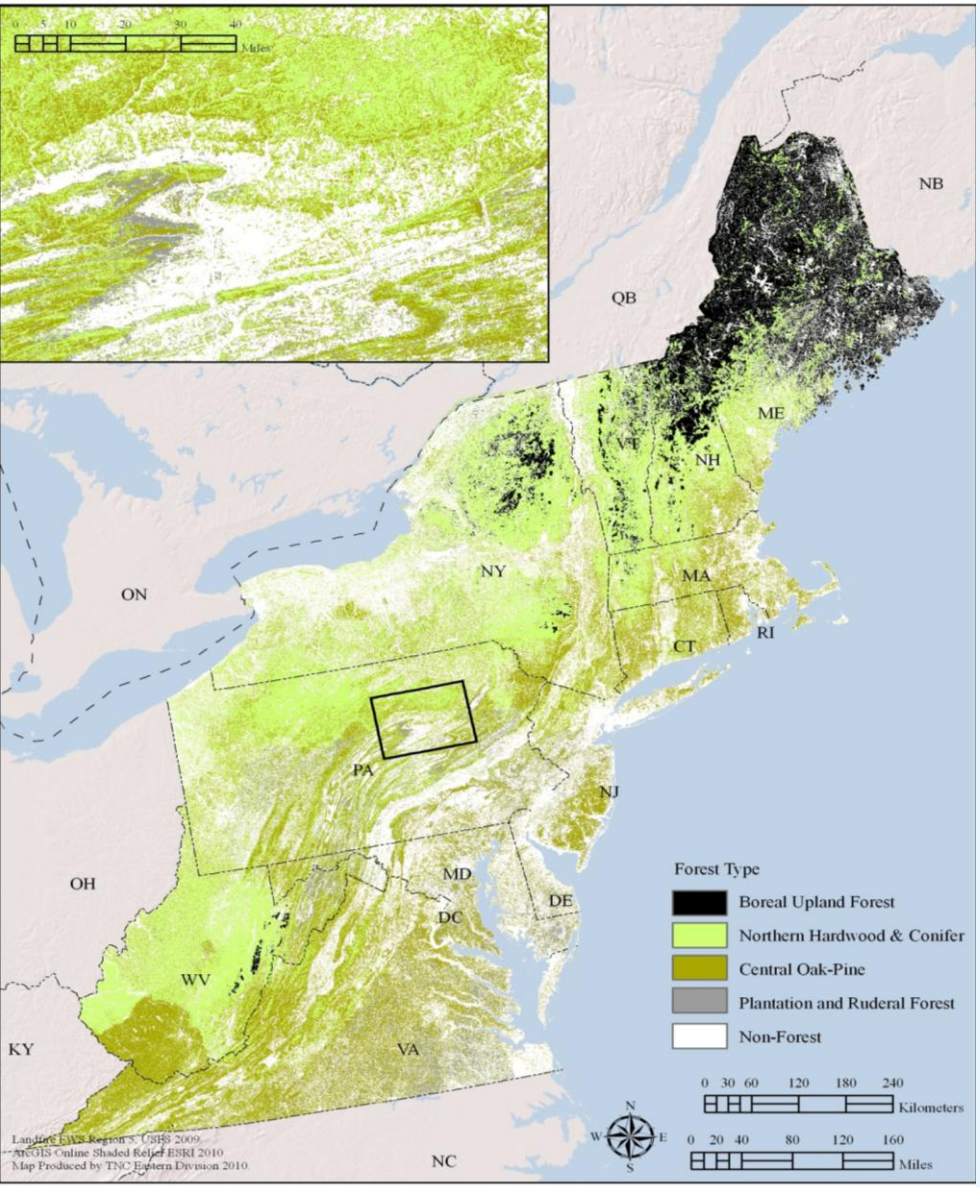


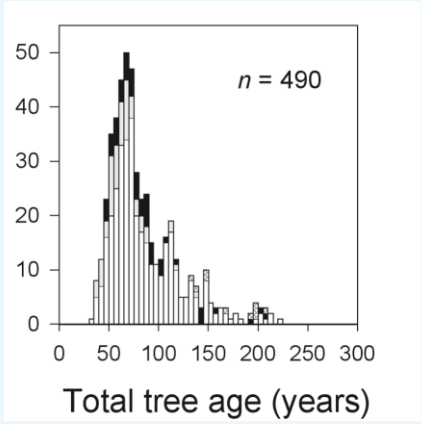
http://conserveonline.org/workspaces/ecs/documents/northeast-conservation-status-report-april

Representatives from every State

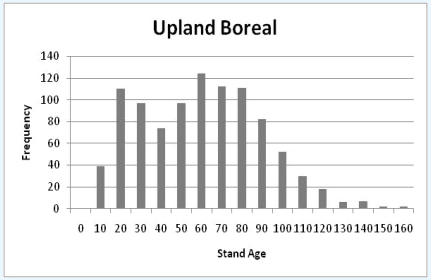
- Jenny Dickson and Rick Jacobson of CT DEP;
- Robert Coxe and Kevin Kalasz of DE DFW;
- John O'Leary and Thomas O'Shea of MA DFW;
- Glenn Therres, Lynn Davidson, Scott Stranko, and
- Dana L.Limpert of MD DNR;
- George Matula and Sandy Ritchie of ME DIFW;
- Jim Oehler, John Kanter, Matt Carpenter, Steve 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.

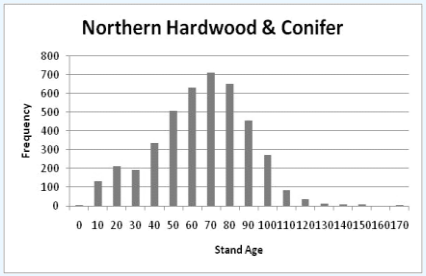
Example: Forests: Age Structure

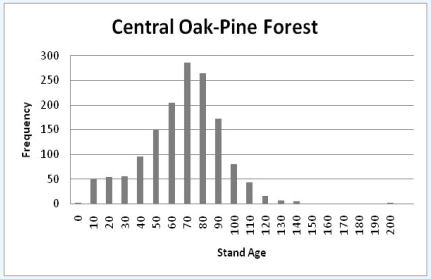


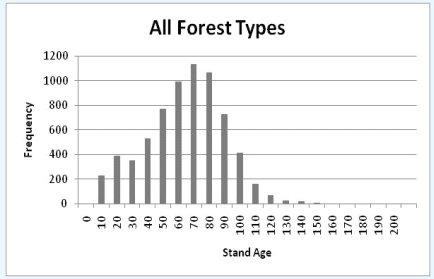


LANDFIRE MAP
FIA data
6952 stands

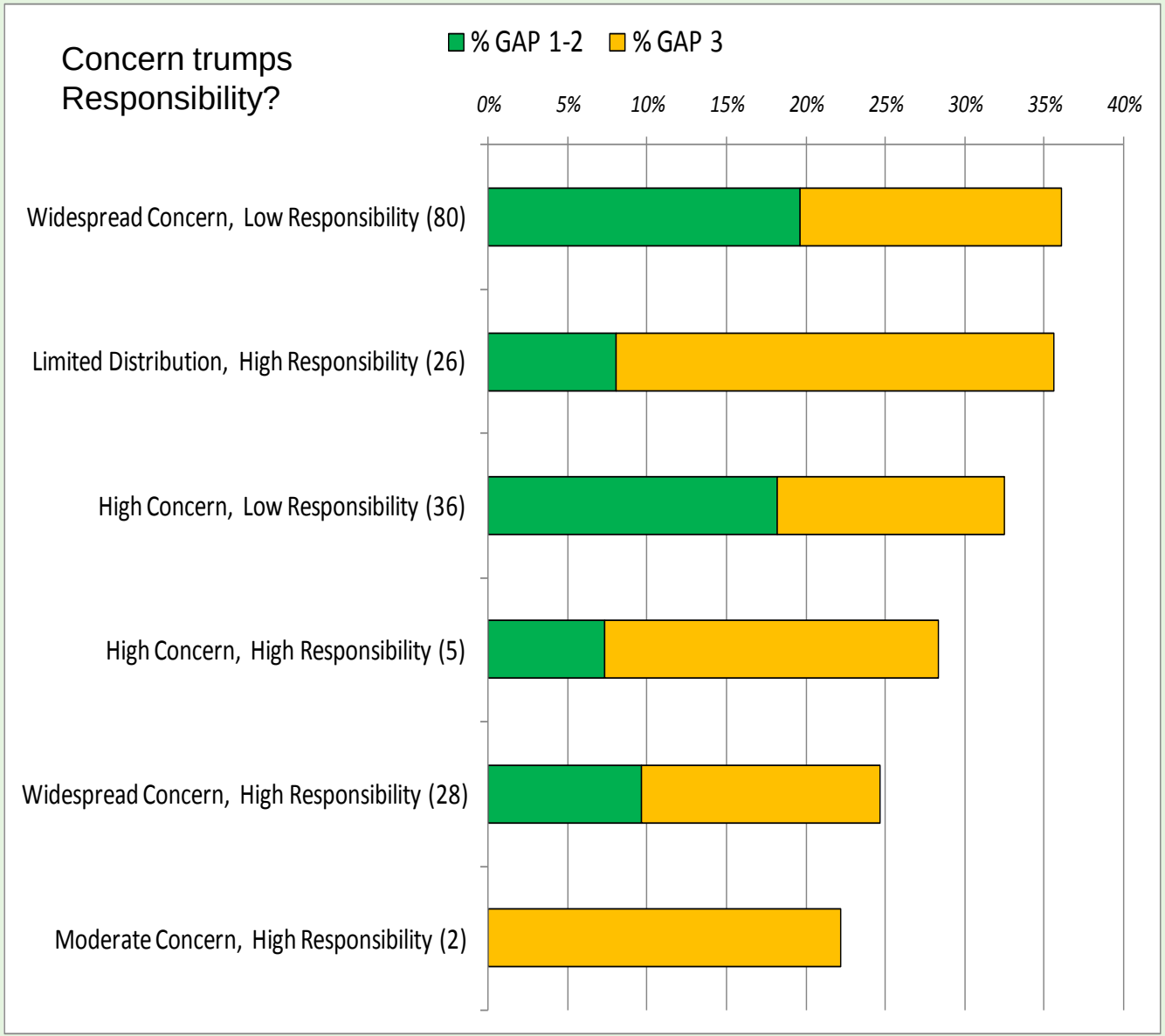








Example: Securement by Category



NEAFWA REGIONAL VULNERABILITY ASSESSMENT

Hector Galbraith, Manomet Center for Conservation Sciences

Curtis Fisher, George Gay, and Chris Hilke, NWF

NEAFWA REGIONAL VULNERABILITY ASSESSMENT PROJECT - GOALS

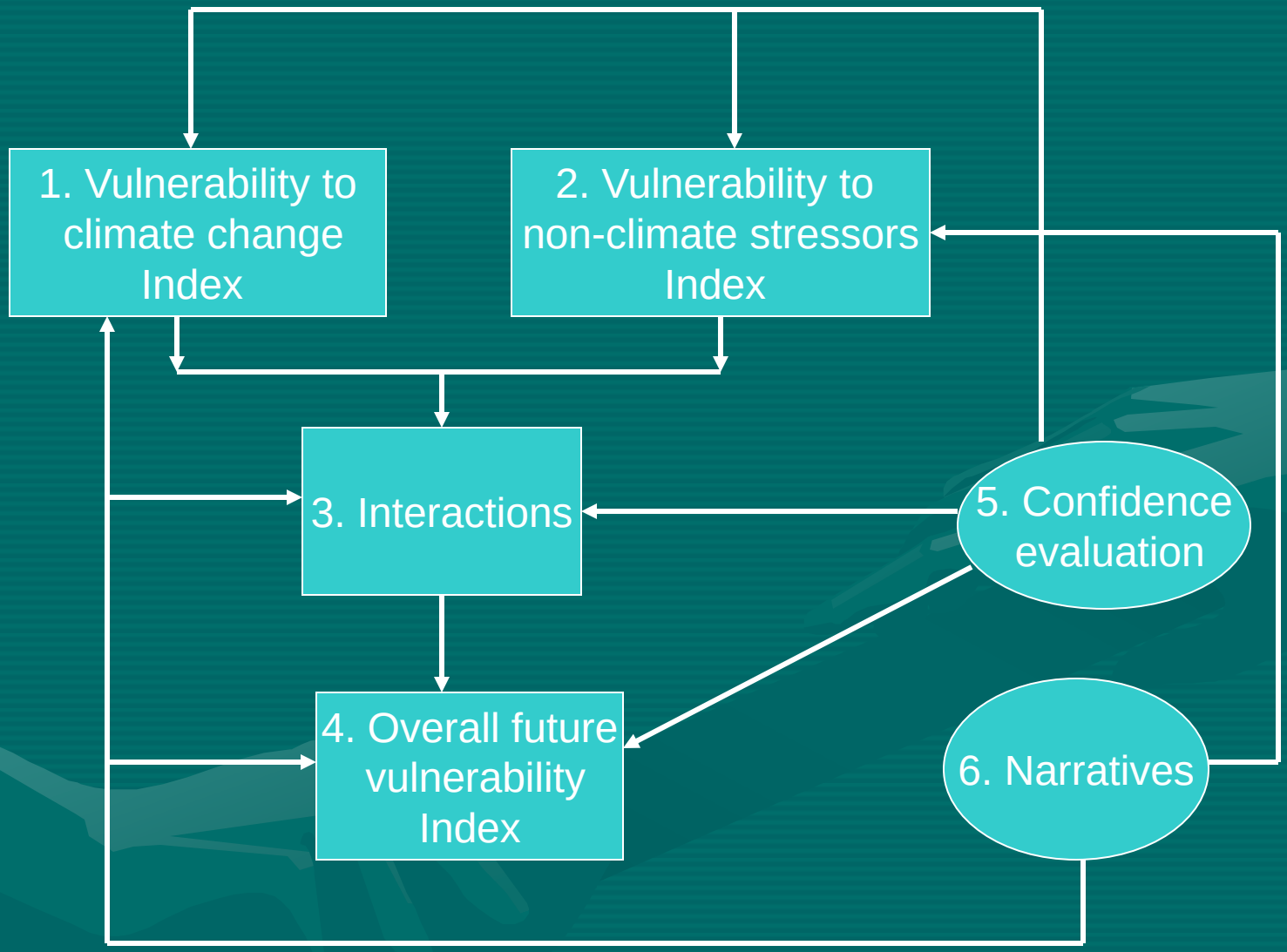
Major objectives:

- map variation in habitat/species vulnerabilities across NE - provide states with regional context for conservation decisions
- provide states with basis for more detailed vulnerability analyses
- identify potential adaptation opportunities
- build capacities within state agencies

PROJECT MAIN TASKS

1. Build expert panel and habitat workgroups
2. Build habitat model to project vulnerabilities
3. Apply model to selected habitats across region
4. Map geographical variation in vulnerabilities and identify potential refugia
5. Apply species model to evaluate vulnerabilities of keystone/foundational spp.
6. Compile catalogue of adaptation options
7. Develop monitoring tools

THE NEAFWA HABITAT VULNERABILITY MODEL



HABITAT WORKGROUP MEMBERS

	Forests	Wetlands	Aquatic
ME	Andrew Cutko	Philip DeMaynadier	Steve Walker
NH			Matt Carpenter
VT	John Austen		Eric Sorensen
MA	John Scanlon		Caleb Slater
NY	Michelle Brown	Zoe Smith	Kristin France
CT	Min Huang		Neal Hagstrom
NJ	Kris Schantz	Kathleen Walz	
PA	Mary Ann Furedi Greg Podniesinski	Greg Podniesinski Mary Ann Furedi	
VA		David Norris	
WV	Elizabeth Byers	Elizabeth Byers	Kerry Bledsoe
MD	Dana Limpert	Dana Limpert	Dana Limpert

22 HABITATS SELECTED FOR ANALYSIS

Forests and Woodlands
Laurentian-Acadian Northern Hardwood Forest
Laurentian-Acadian Pine-Oak Forest
Laurentian-Acadian Pine-Hemlock-Hardwood Forest
South-Central Interior Mesophytic Forest
Central Appalachian Pine-Oak Rocky Woodland
Northeastern Interior Dry-Mesic Oak Forest
Central Appalachian Dry Oak-Pine Forest
Northeastern Interior Pine Barrens
Laurentian-Acadian Floodplain Forest
Montane Spruce-Fir Forest
Appalachian (Hemlock)-Northern Hardwood Forest
High Allegheny Wetland

Tundra
Alpine Tundra

Aquatic
Cold water fisheries
Central Appalachian Stream/ Riparian
Floodplain Central Appalachian River

Wetlands
North-central Appalachian Acidic Swamp
North-Central Interior and Appalachian Acidic-Peatland
Laurentian-Acadian Wet Meadow-Shrub Swamp
Northern Atlantic Coastal Plain Fresh and Oligohaline Tidal Marsh
Laurentian-Acadian Freshwater Marsh
Low Elevation Boreal Bogs

NEXT STEPS

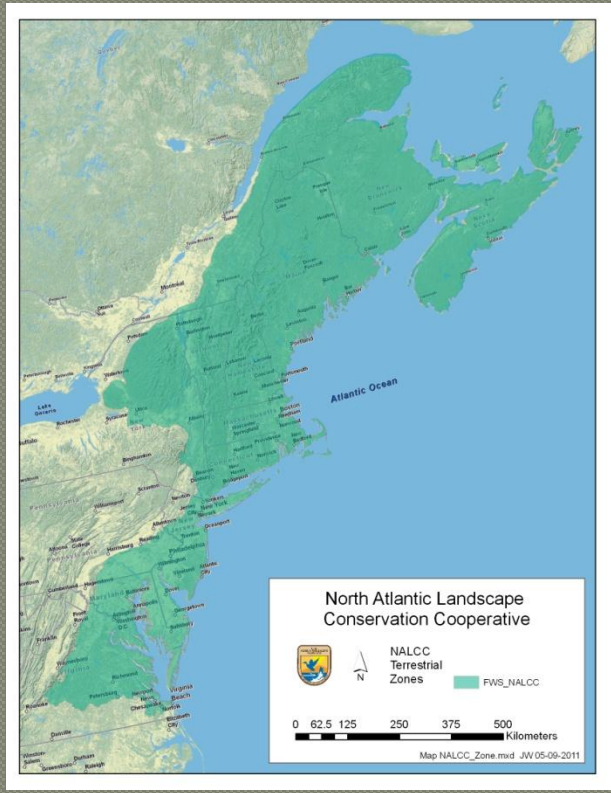
- Run model on selected habitats - ongoing
- Finalize vulnerability estimates – this year
- Map patterns of vulnerability – this year
- Assess vulnerabilities of selected species – this and next year
- Map potential habitat refugia? – next year
- Move to coast! – this year

Selecting Representative Species for Conservation Planning in the Northeast Region (initially in North Atlantic LCC)

USFWS Region 5 Strategic Habitat Conservation Steering Committee

University of Massachusetts Amherst

U.S. Forest Service



Need for Project?

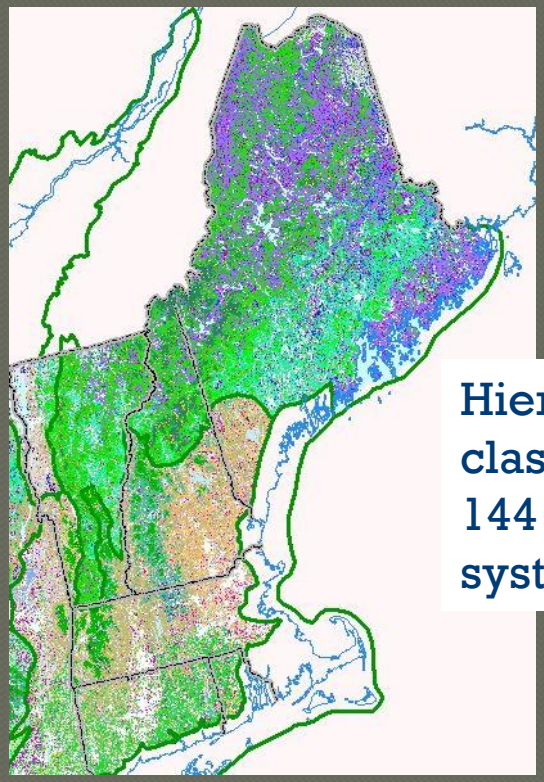
- FWS has responsibility to manage and conserve all trust species; states have responsibility for species occurring in their states
- Number of priority trust species & state species of greatest conservation need (SGCN) exceeds the resources available for moving forward with detailed conservation planning
- Need to identify a suite of "Representative Species" that can represent the larger group of Priority Species

What Is a Representative Species?

- …a species whose habitat needs, ecosystem function, or management responses are similar to a group of other species.
  - other species in that group are expected to respond in a similar way as the representative species to conservation actions
- …also likely need to plan for stand-alone species that have
  - unique habitat or ecosystem function;
  - needed to prioritize management actions; or
  - needed to help achieve a more comprehensive suite of species for biodiversity conservation.

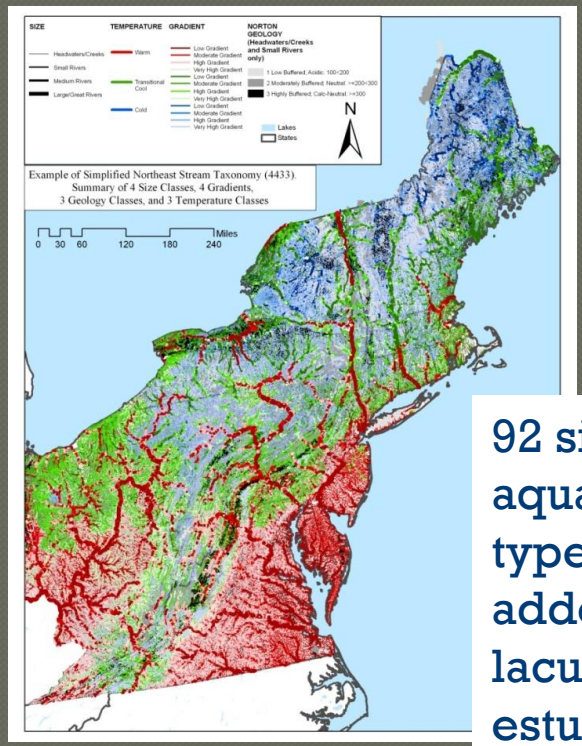
Species-Habitat Relationships Database

NEAFWA - NE Wildlife Habitat Classification & Mapping Project



Hierarchical classification
144 habitat systems

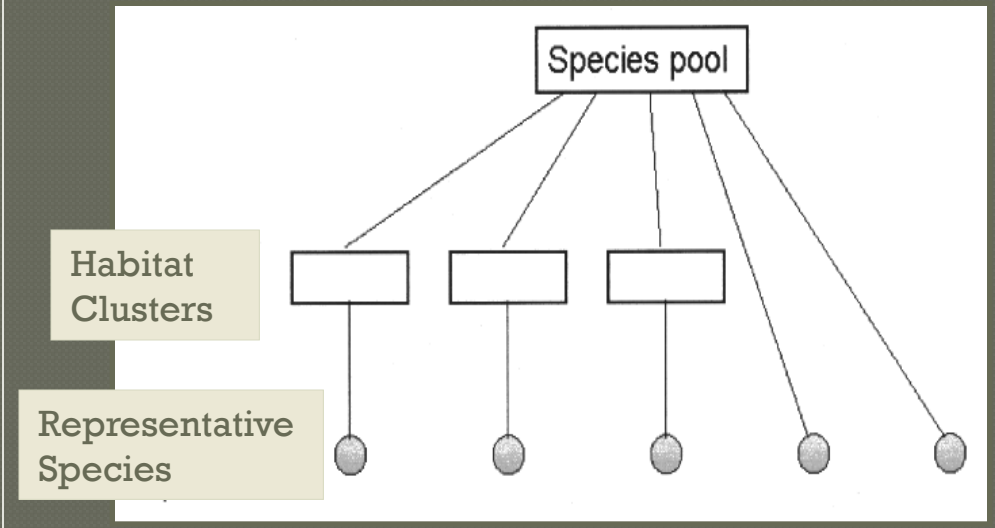
NEAFWA – NE Aquatic Habitat Classification



92 simplified aquatic habitat types
added lacustrine, estuarine, marine

Representative Species Process:
Overview

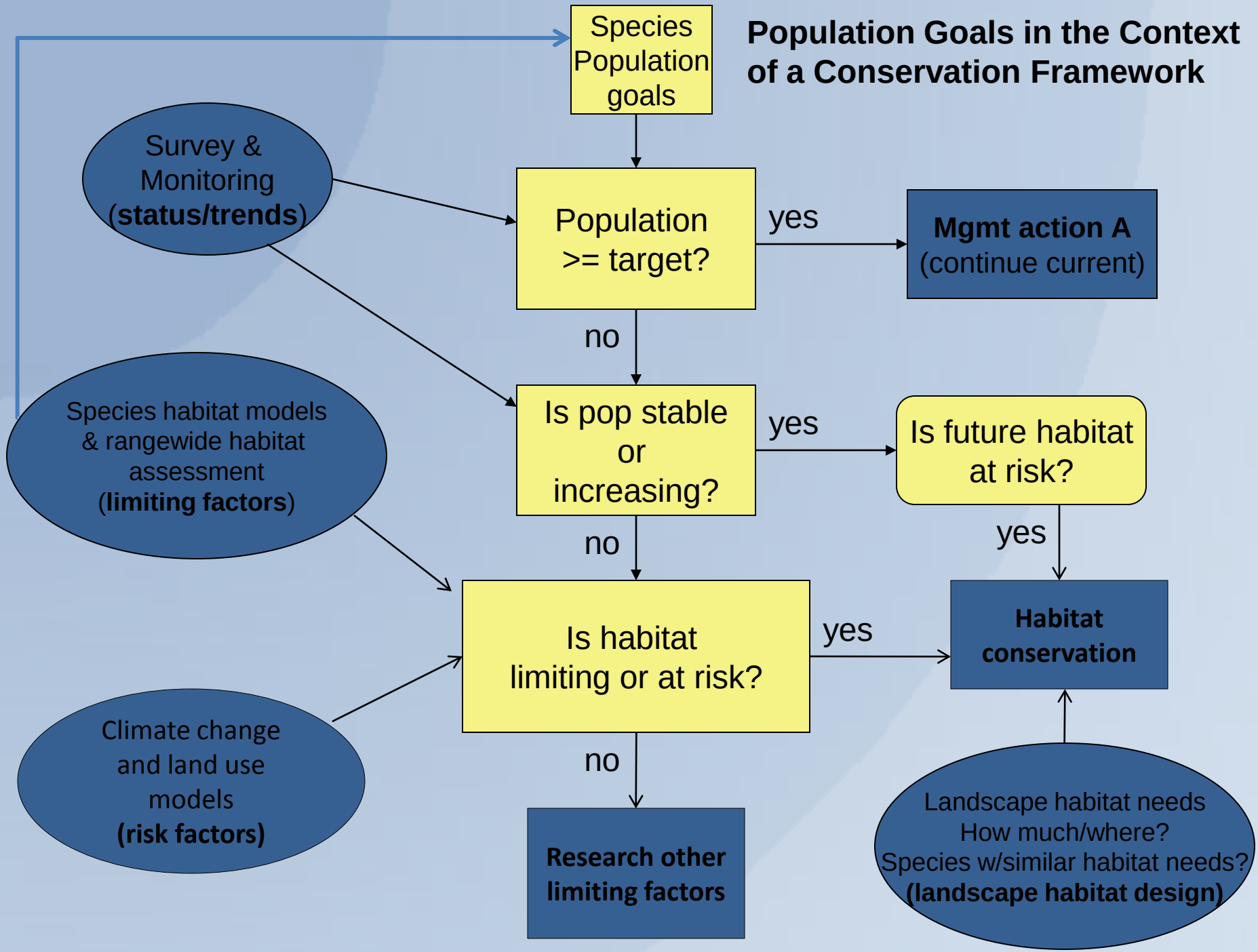
- Phase I
  - Compile list of priority species
- Phase II
  - Develop species-habitat association database
  - Expert review
- Phase III
  - Conduct cluster & indicator species analyses
- Phase IV
  - Develop ranking criteria
- Phase V
  - Conduct region-wide workshops



Next Steps

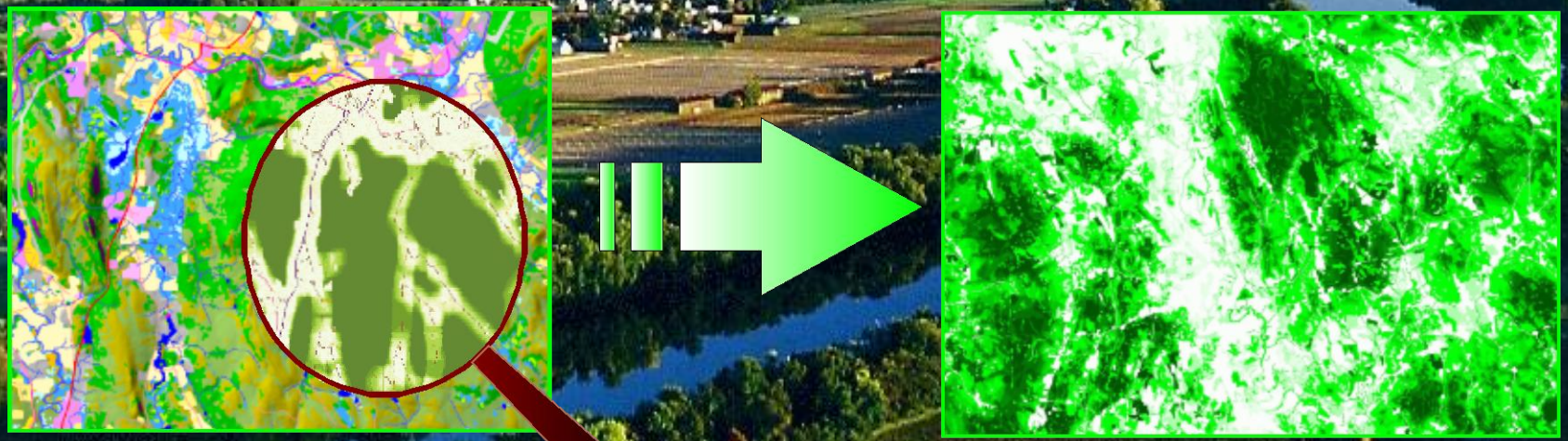
- Finalize list of representative terrestrial species
- Revise approach for aquatic species
- Develop species-habitat models for terrestrial species (through LCC Designing Sustainable Landscapes Project)
- Compile/develop population objectives from existing plans with partner input informed by modeling

Population Goals in the Context of a Conservation Framework



Assessment of Landscape Change in the North Atlantic Landscape Conservation Cooperative: Decision-Support Tools for Conservation (Designing Sustainable Landscapes)

Kevin McGarigal, Brad Compton, Ethan Plunkett,
Liz Willey, Bill Deluca, Joanna Grand, Scott Schwenk



North Atlantic Landscape Conservation Cooperative

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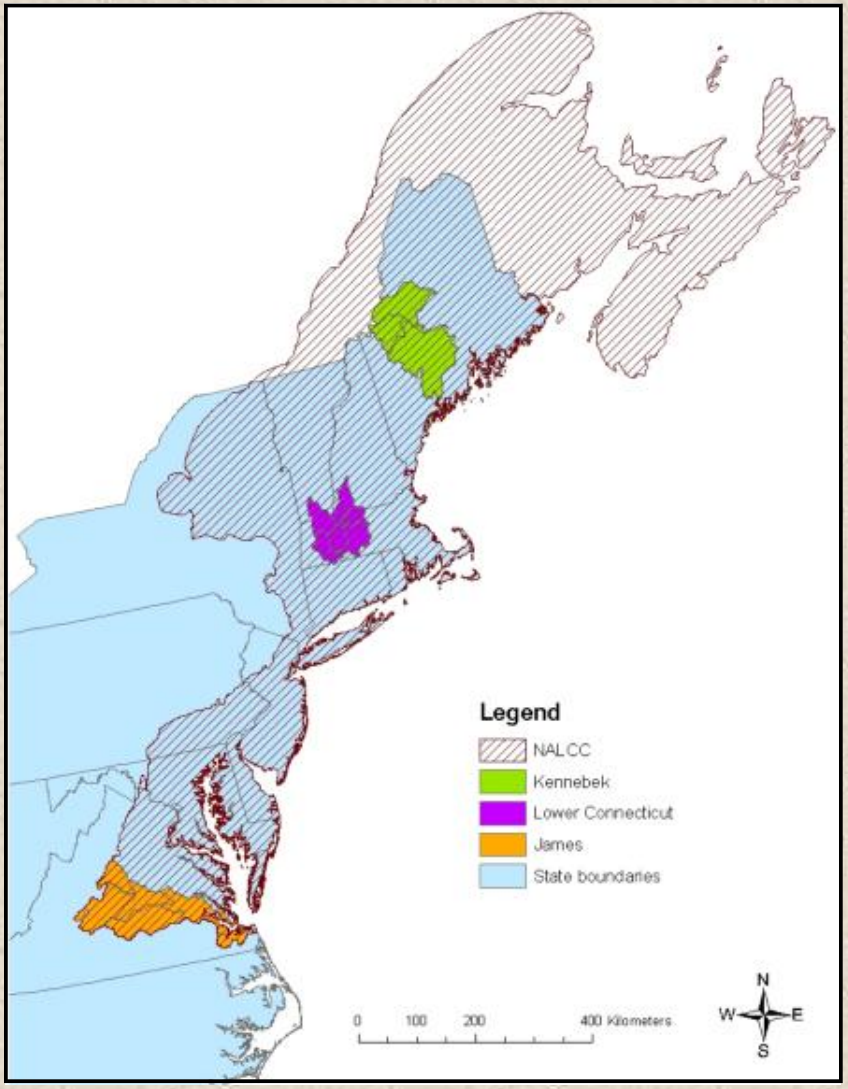
Purpose (phase 1)

Assess current and future habitat capability and ecological integrity that will inform conservation design in the North Atlantic LCC.

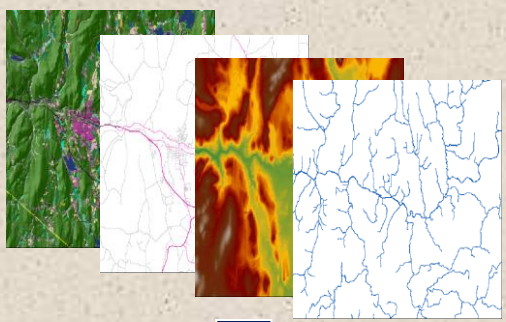
Piloted in 3 watersheds:

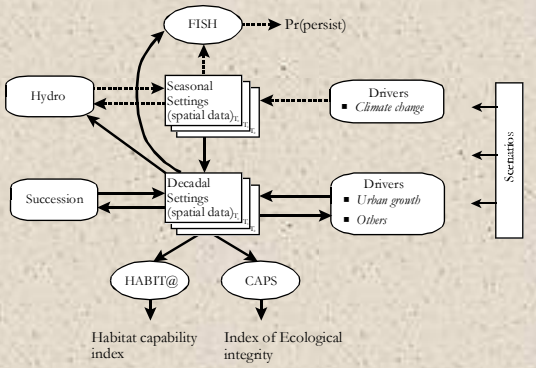
- Kennebec (15,264 km^2)
- Lower Connecticut (8,579 km^2)
- James (16,747 km^2)

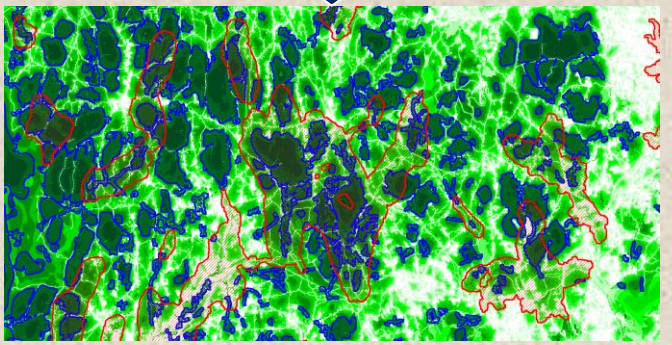


Approach

1. Develop and compile spatial data
2. Build landscape change model – climate change, urban growth, succession
3. Assess landscape ecological integrity (*coarse filter*: intactness, resiliency, buffering, diversity, and connectivity) and habitat capability for representative species (*fine filter*) currently and under alternative future scenarios
4. Identify and map priorities for conservation (land protection, management and restoration)







Products & Opportunities

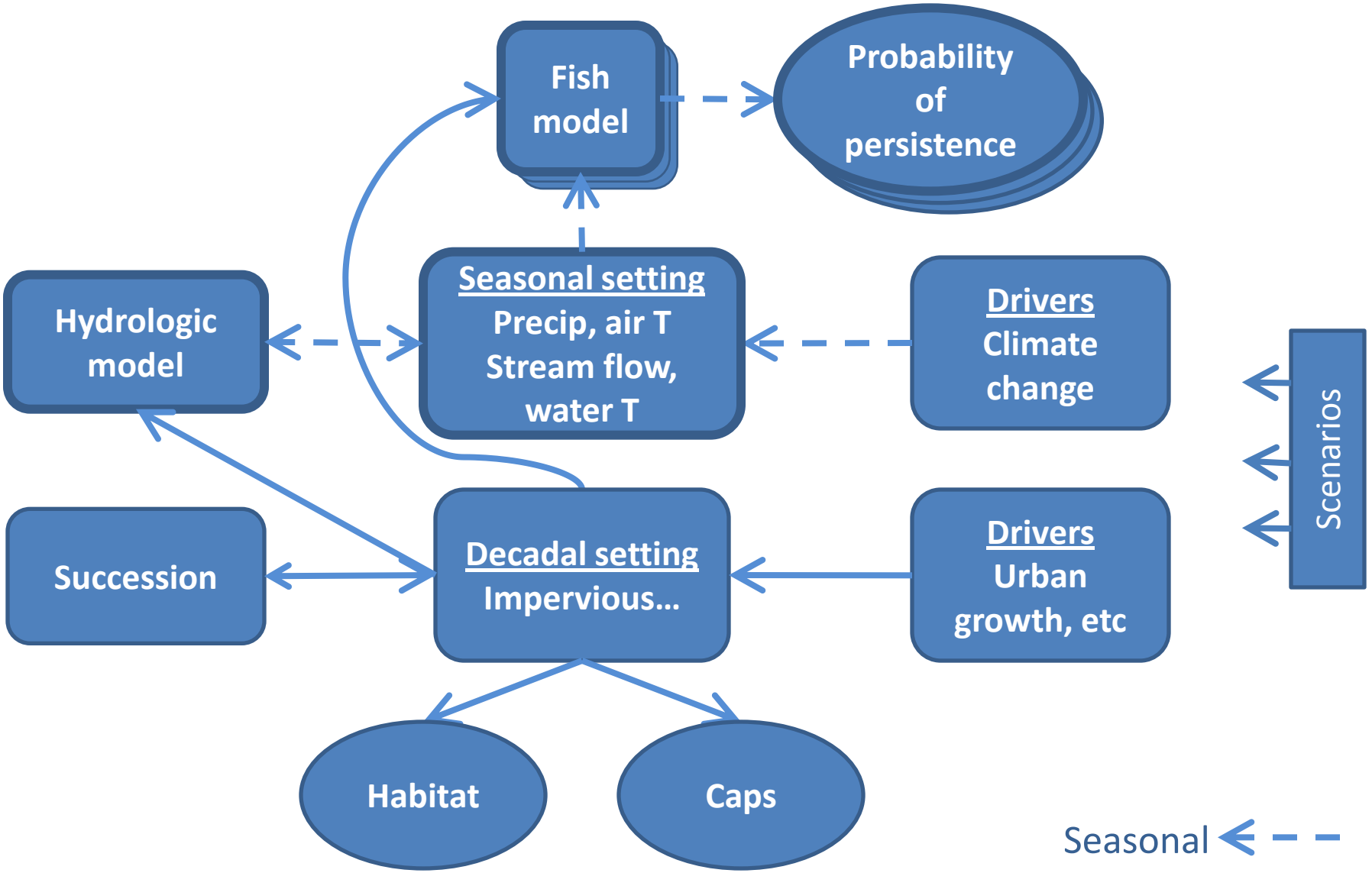
1. Maps of all spatial data layers input to landscape change, assessment and design model for the entire NALCC
2. Maps of ecological integrity under alterative future scenarios for the pilot watersheds
3. Maps of habitat capability for a suite of representative species under alternative future scenarios for the pilot watersheds
4. Maps of conservation priorities for land protection, management and restoration for the pilot watersheds
5. Strategy for maximizing the complimentarity of the coarse- and fine-filtered approaches

Project Outlook

- Pilot study complete May 2012
- Next steps (phase 2):
  - Expand to full NALCC
  - Develop additional modules (drivers, e.g., timber harvest)
  - Upgrade wildlife models to occupancy/population
  - Develop optimal landscape design algorithms
  - Develop decision-support tool

- **www.umass.edu/landeco/research/nalcc/nalcc.html**
- **www.fws.gov/northeast/science/nalcc.html**

Modeling Framework



Resulting DSS: evaluate alternate management strategies

Developing recommendations for sustainable flows in the Great Lakes Basin of New York and Pennsylvania

Sandy Creek and the shore of Lake Ontario, Lakeview Wildlife Management Area @Baird Associates

***Sustainable Flows*:**
The flow of water in a natural river or lake that sustains healthy ecosystems and the goods and services that humans derive from them

Primary Threats:
Water withdrawal & return
Dam management
Land use changes
Climate change

Project Objectives:

- Classify streams and **characterize** the current hydrologic **conditions** in each class
- Establish links between degrees of hydrologic alteration and ecological impacts to biota
- Recommend flow **goals** and/or limits on flow alteration, ….needs of **target species**, natural processes, and habitats

***Broader benefits of the project*:**

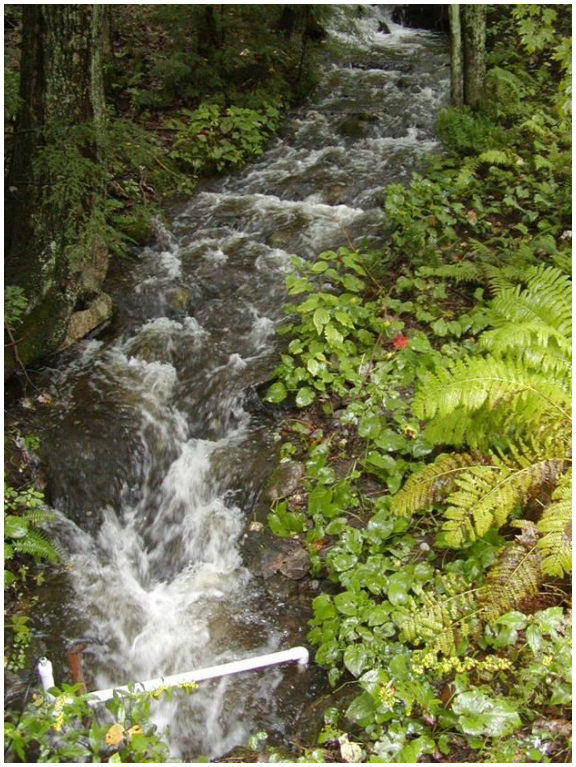
- Guide implementation of the Compact in other states
- Test and document these methods for other NEAFWA states

Ben Letcher

USGS, Conte Anadromous Fish Research Center, Turners Falls, MA

Keith Nislow

USFS, Northern Research Station, Amherst, MA

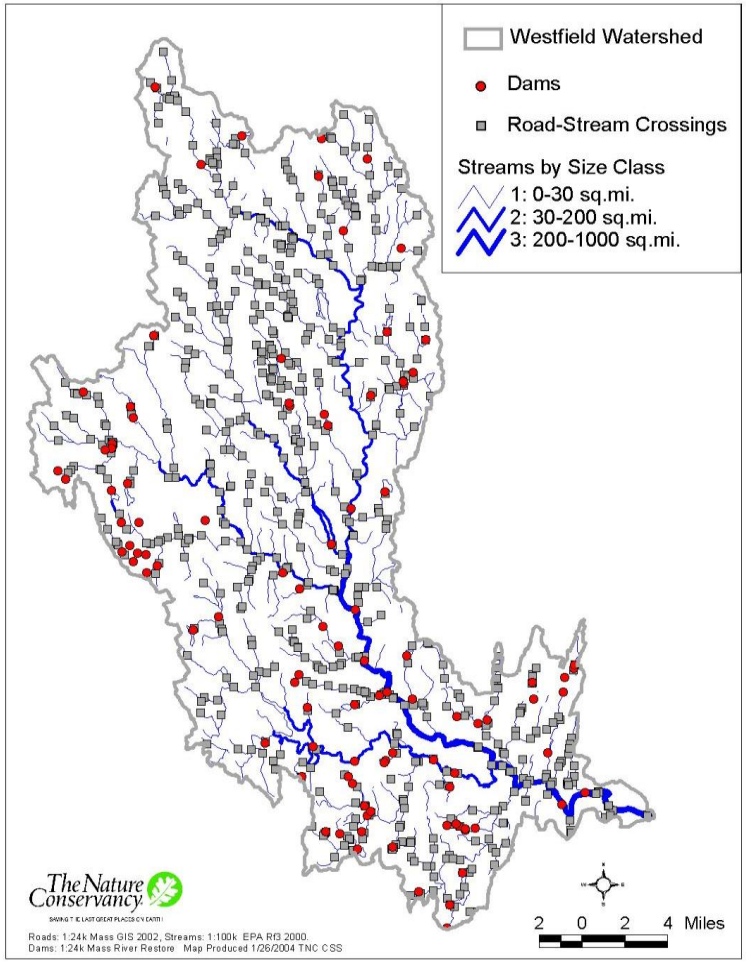


SALMONID (BROOK TROUT) POPULATION PERSISTENCE

Development of a DSS

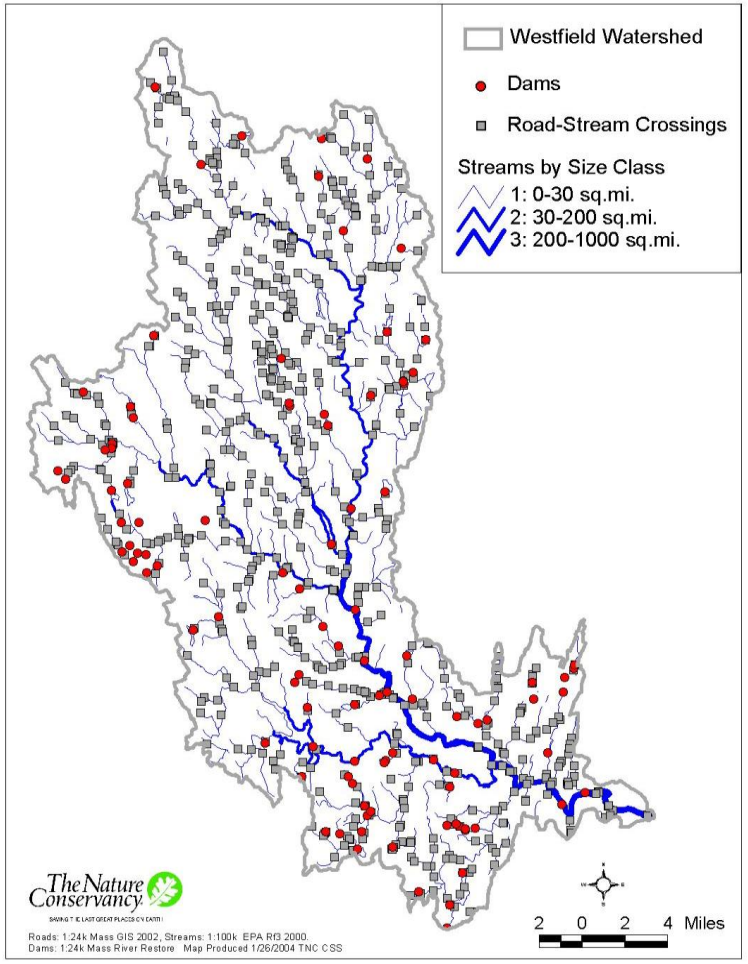
Threats to population persistence

- Habitat fragmentation
  - Isolated populations
- Water withdrawals
  - Seasonal effects of stream flow
- Land use/land change
  - Riparian buffer, impervious surfaces
- Climate change
  - Air temperature and precipitation affecting:
    - Stream flow and temperature
- Interactions with climate change

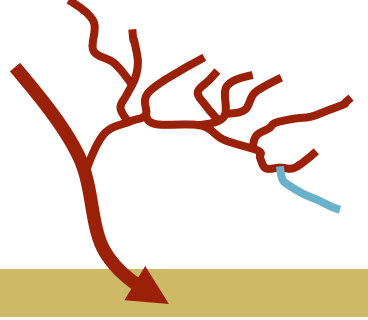


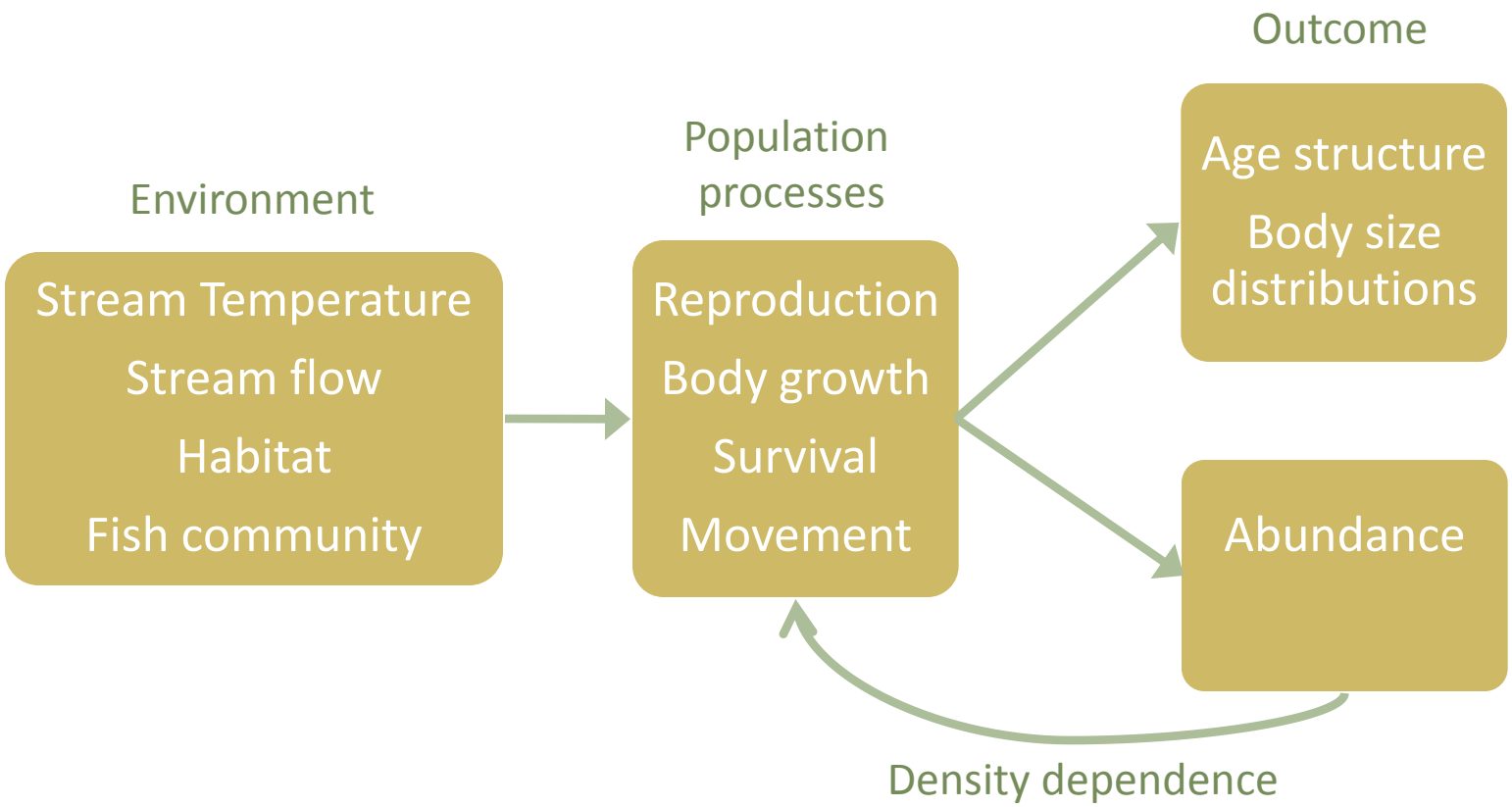
How to address the threats?

- Fine-scale population modeling
  - Need Data: Individual data (35,000 tag fish over 15 years
  - Several sites



Approach

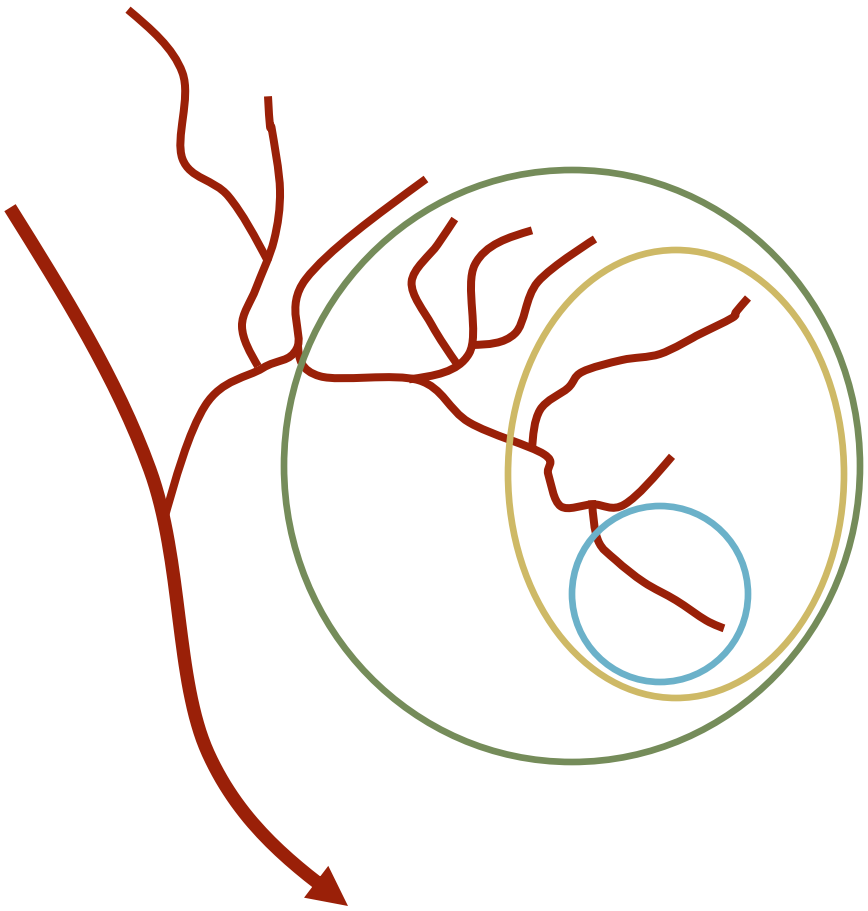




Catchment scale model (< 1 Km)

Key Points

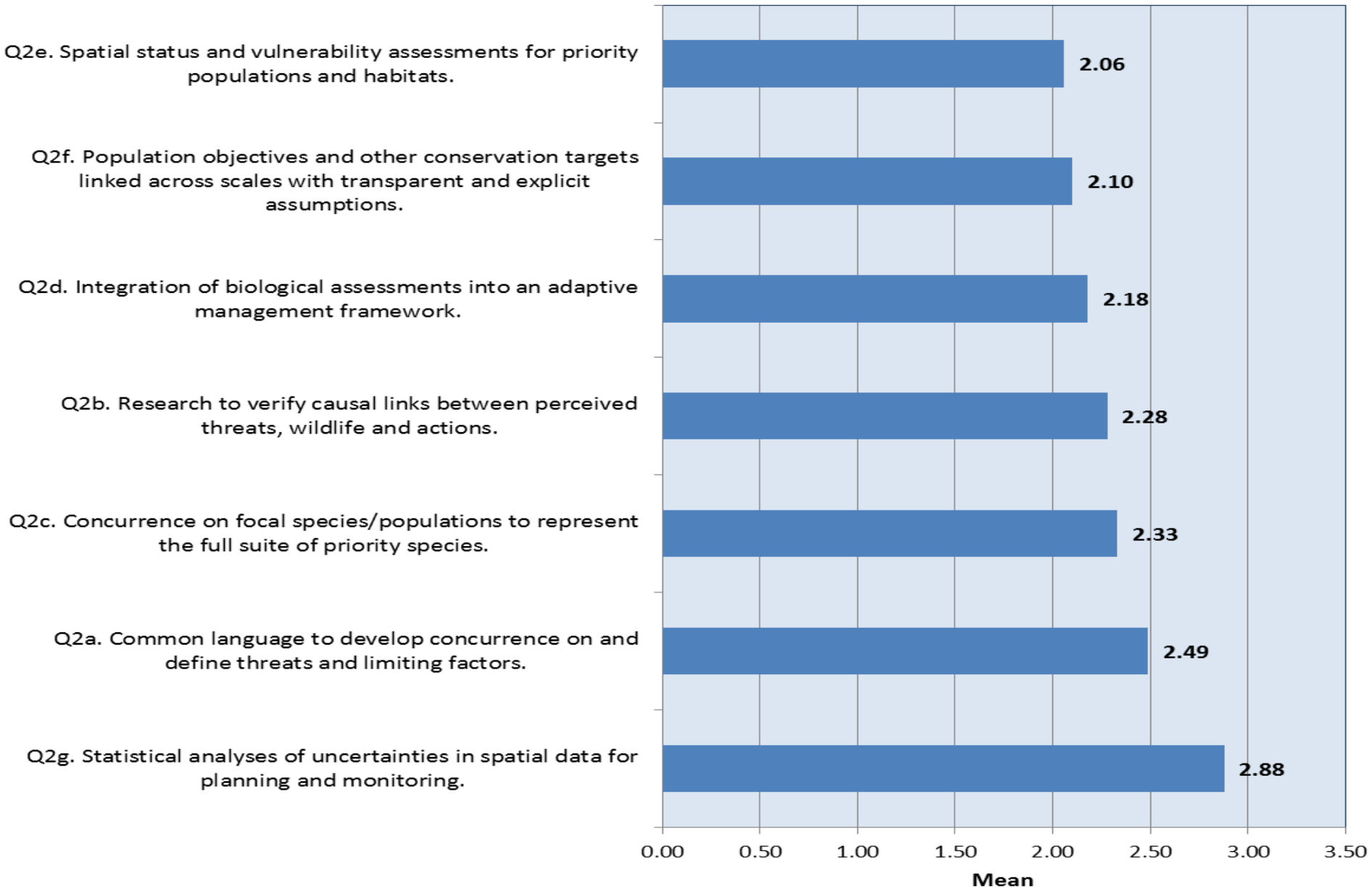
- Hierarchical models
  - Scalable
  - Accounts for uncertainty
- Web-based DSS
  - End Point: Population Persistence
  - Scenario testing (e.g., flow alterations; prioritization; climate change)



<u>Pre-workshop Survey Question</u>:
What priority do you think should be given to each of the following *<u>biological assessment activities</u>* to achieve regional conservation in the Northeast?

Session 3: Biological Assessment & Goal-Setting

Mean scores rank in order where
1.00 to 1.49 = Utmost priority
1.50 to 2.49 = High priority
2.50 to 3.49 = Medium priority
3.50 to 4.00 = Low priority



Survey responses: *biological assessment*

Purpose (why)

- Identify focal species as surrogates for other priority species
- More understanding of uncertainties may not be critical in adaptive management context

Techniques (how)

- Definition and objectives must be clear for focal species and vulnerability assessments (common language exists on threats)
- Identify measurable population targets from field observations

Barriers/challenges

- State plans don't always have a common language
- Cannot rely on focal species to represent full suite of priority species
- Verifying causal links takes money and years

Relevant Active RCN Topics

- Identify High Priority NE Species of Greatest Conservation Need (RCN Topic 2)
- Identify and Assess Threats to NE Species of Greatest Conservation Need (RCN Topic 7)
- Identify NE Species of Greatest Conservation Need Data Gaps, Design Data Collection Protocols, and Collect Data (RCN Topic 3)

Relevant LCC Science Needs

Climate Change

- General: General climate change vulnerability assessments for northeastern fish and wildlife habitats and species (NALCC)
- Amphibians & Reptiles: Specific climate change vulnerability assessments for northeastern amphibians and reptiles (NALCC)
- Cold Water Streams: Specific climate change vulnerability assessments for cold water stream habitats and species, including brook trout (NALCC)
- Lotic Systems: Climate change impacts on lotic aquatic communities (UMGLLCC)
  - Impact of climate change and human population growth on future stream and river flows within the South Atlantic LCC (SALCC)
- Great Lakes Fisheries: Great Lakes fisheries trophic response to climate change (UMGLLCC)
- Avian: Avian response to climate change (UMGLLCC)

Relevant LCC Science Needs

Aquatic Habitat Modeling

- Species-habitat modeling and mapping of aquatic species (NALCC)

Invasive Species

- Evaluating high-risk pathways for aquatic invasive species invasions (SALCC)

Discussion Questions

1. Priorities: What are the highest priority additional projects or needs for advancing biological assessment (triage, biological assessment and goal setting)?
2. Who: Who are the key members of the conservation community who can address these priorities and what roles are best suited to RCN and LCCs?
3. Value to Managers: What is value added of triage, regional biological assessments and goal setting to statewide or site-specific management?
4. Role of SWAPS/Compiling objectives: How can we draw from, and roll-up, state plans to inform regional planning most effectively?