Northeast
Regional Conservation Opportunity Areas

Introduction

context | vision | overview

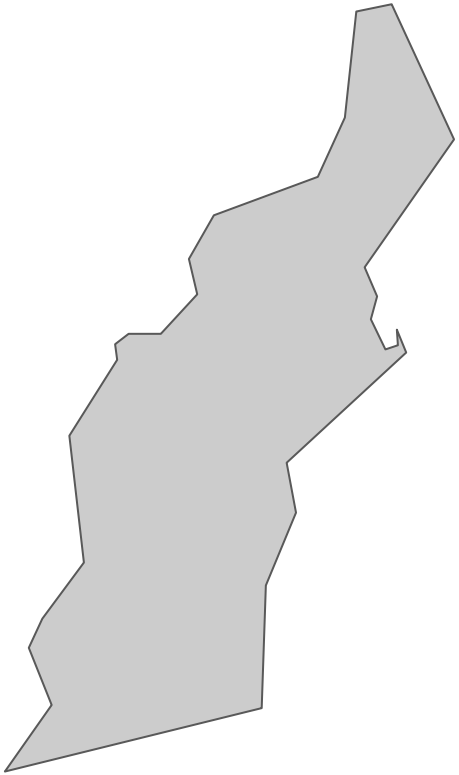
Vision

Engage the collective wisdom and common interest of partners

To identify and map a **connected** network of **resilient** and **ecologically intact** habitats that will support **biodiversity** under changing conditions

Why
is this project important?

Geographic scale



Ecological scope











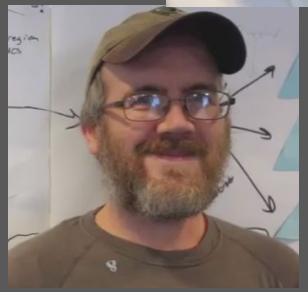



Partner networks

Key partners






Looking across state boundaries

Timeliness


RCOA
Big Grand Plan
Any Swap
Strategy
Recovery
WATER SHED
FOREST
CLIMATE
WATER QUALITY
Development

Efficiency

Regional patterns focus conservation efforts

- Where can we hedge our investments in the face of change?
- Habitats that appear secure locally may be in trouble elsewhere
- Opportunities to pre-empt listing may be where species are not on the radar
- Which species and habitats is my state/org most “responsible” for?
- Is my state the battleground or sideshow for species or habitat x?

Team

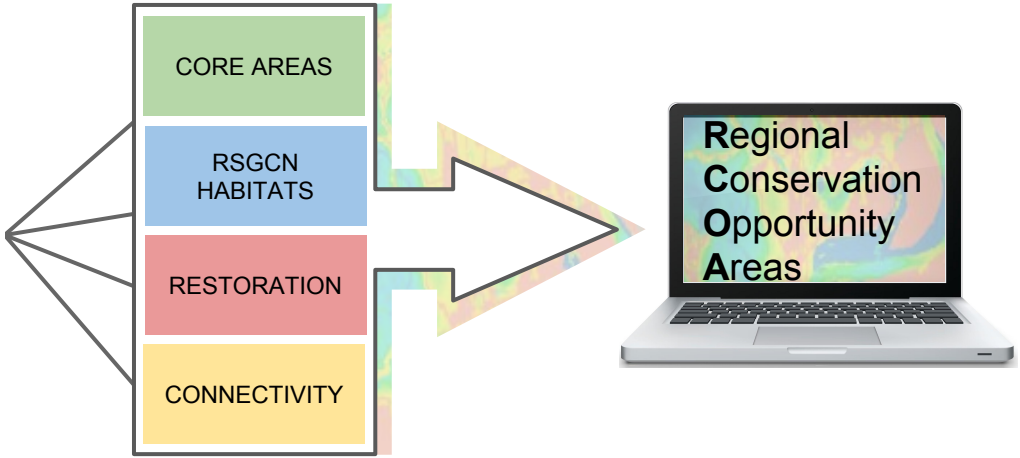
Andrew Milliken *USFWS & North Atlantic LCC*
Andy Cutko *ME DOC*
Brian Hall *Harvard Forest*
BJ Richardson *USFWS*
Brad Compton *UMass Amherst*
Chad Rittenhouse *University of Connecticut*
Chris Burkett *VA DGIF*
Chris Tracey *PA Natural Heritage Program*
Dan Rosenblatt *NYS DEC*
Gwen Brewer *MD DNR*
Jeff Allenby *Chesapeake Conservancy*

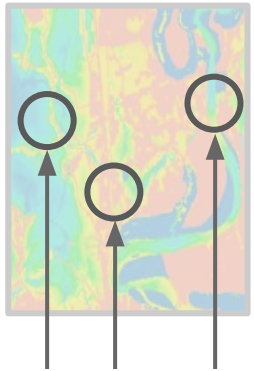
Jonathan Brooks *MA F&W*
Kate Moran *CT DEEP*
Katie Callahan *NH Fish and Game*
Kevin Ruddock *RI TNC*
Mark Anderson, Arlene Olivero &
Melissa Clark *TNC*
Michale Glennon *WCS*
Patrick Woerner *NJ DEP*
Steve Fuller, Scott Schwenk, Renee Farnsworth & Stéphanie Cuénoud
North Atlantic LCC

Process

Leveraging investments	Inclusive collaboration	Relevant science	Better implementation

RCN
&
LCC SCIENCE

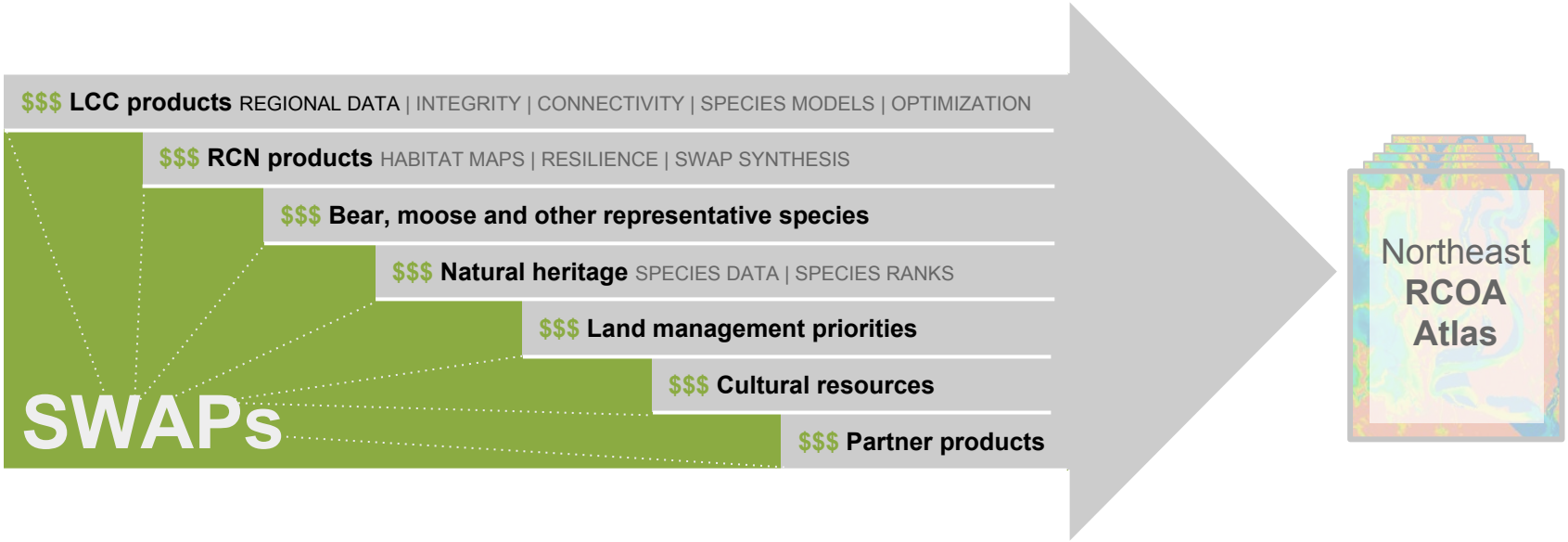




Coordinate partners for success

Leveraging investments

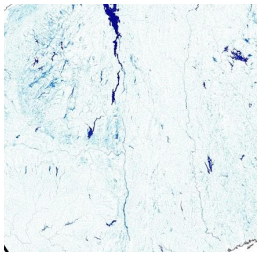
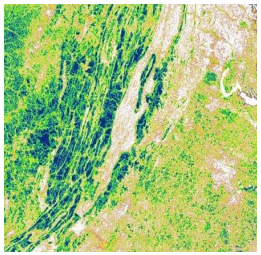
To address the long-term needs of game species

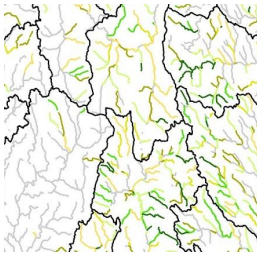
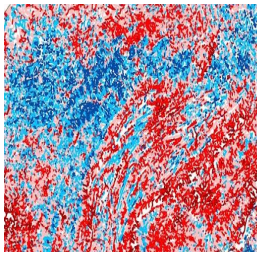
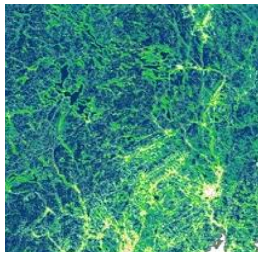


Vision

Products

An atlas with methodology documentation

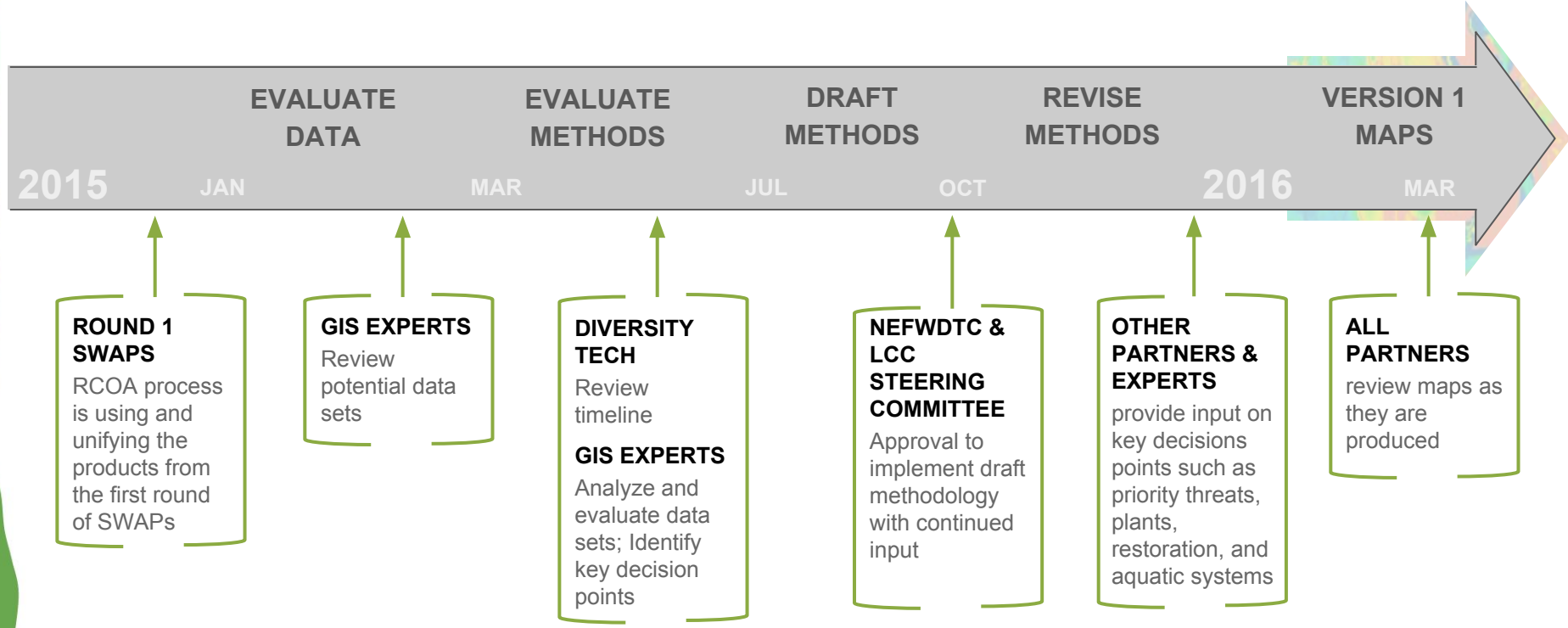



Uses

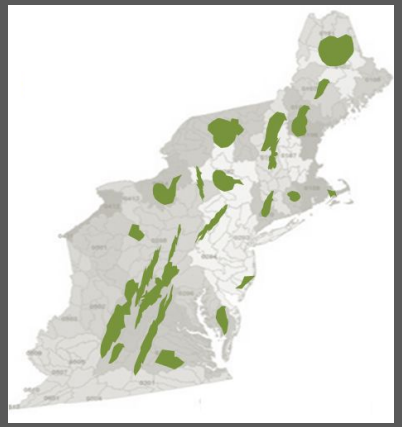
- Prioritize restoration & land management
- Inform land protection
- Identify core areas for all species
- Complement/Confirm state priority areas
- Regional context for state decisions
- Monitor changes in landscape over time
- Inform policy and listing decisions
- Grant applications
- Guide SWAP implementation and RCNs

A year in review

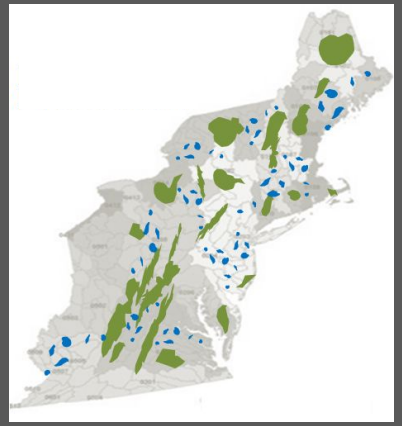


Methods overview

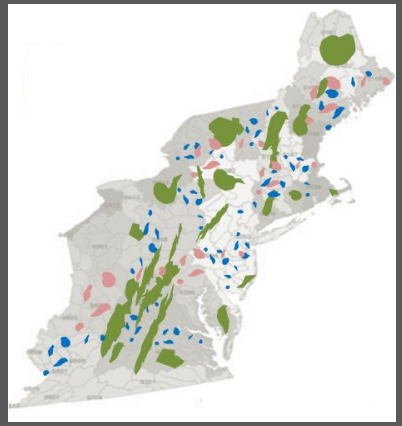
CORE AREAS



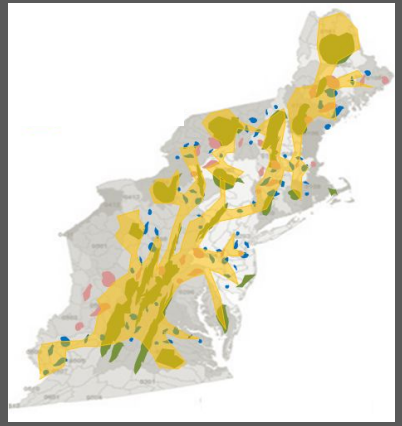
RSGCN HABITATS



RESTORATION



CONNECTIVITY



CORE AREAS

Representing most intact and resilient ecosystems and habitats for fish, wildlife and plants in the region

RSGCN HABITATS

Important habitats for rare and threatened RSGCN

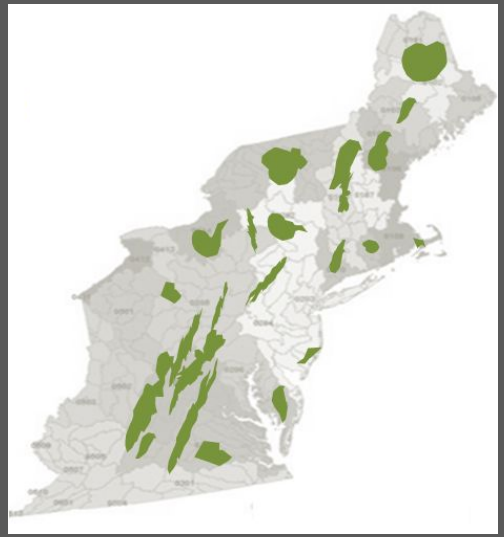
RESTORATION

Prioritization to focus habitat restoration and management efforts

CONNECTIVITY

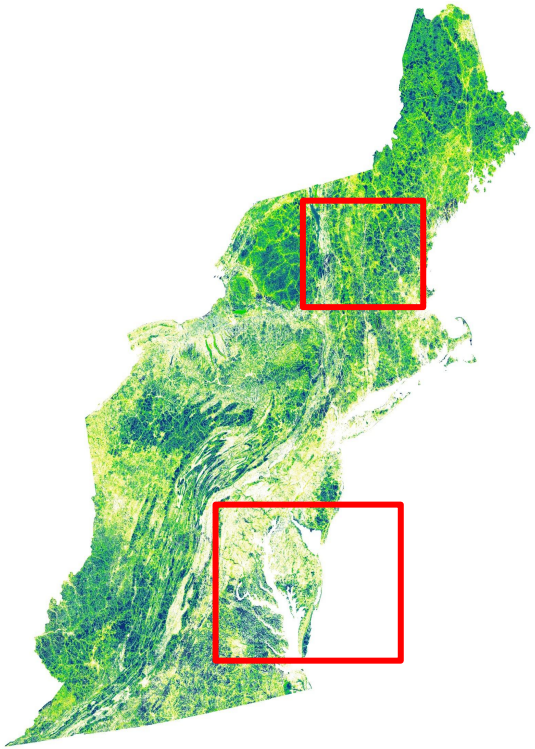
Ensures all wildlife have opportunity to find good habitat

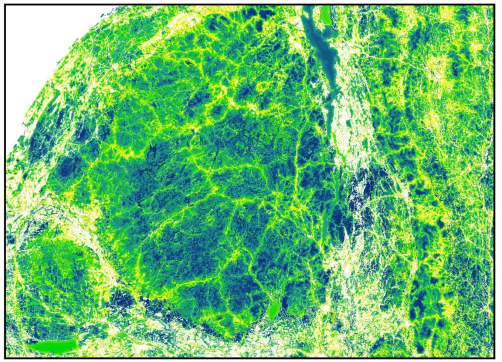
Core areas

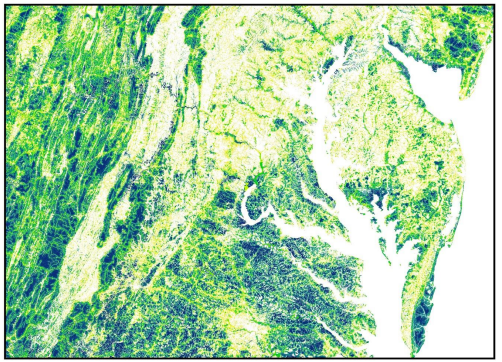


Core areas analysis

Identifies land where we can protect high ecological integrity and high resilience







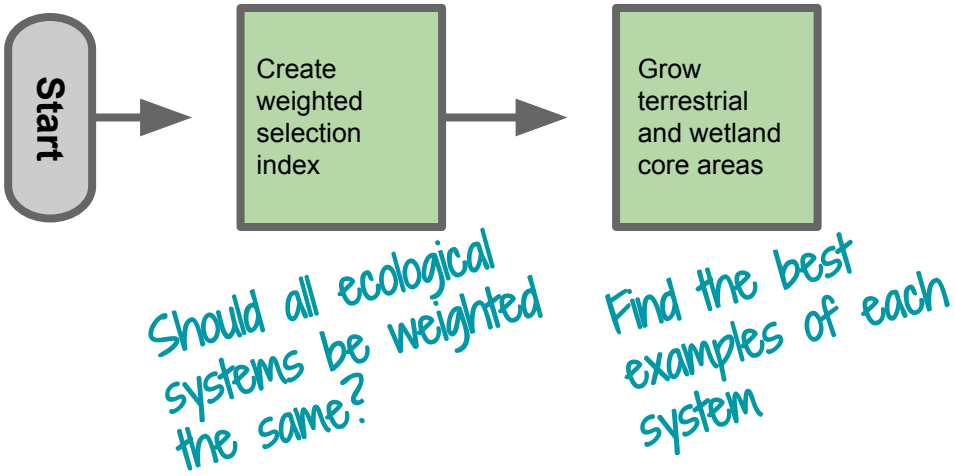
Selection Index

Value

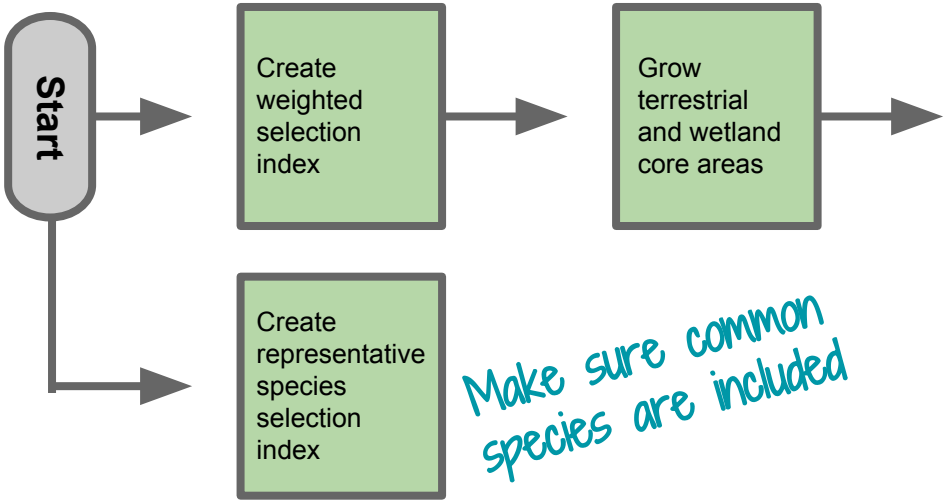
High : 1

Low : 0.01

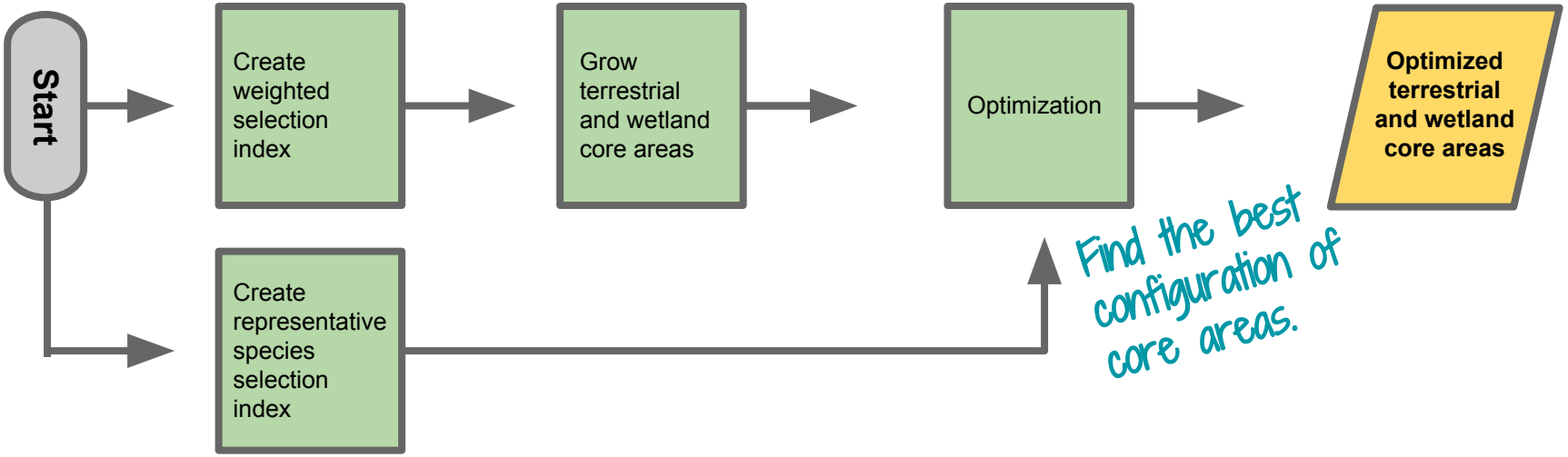
Core areas analysis



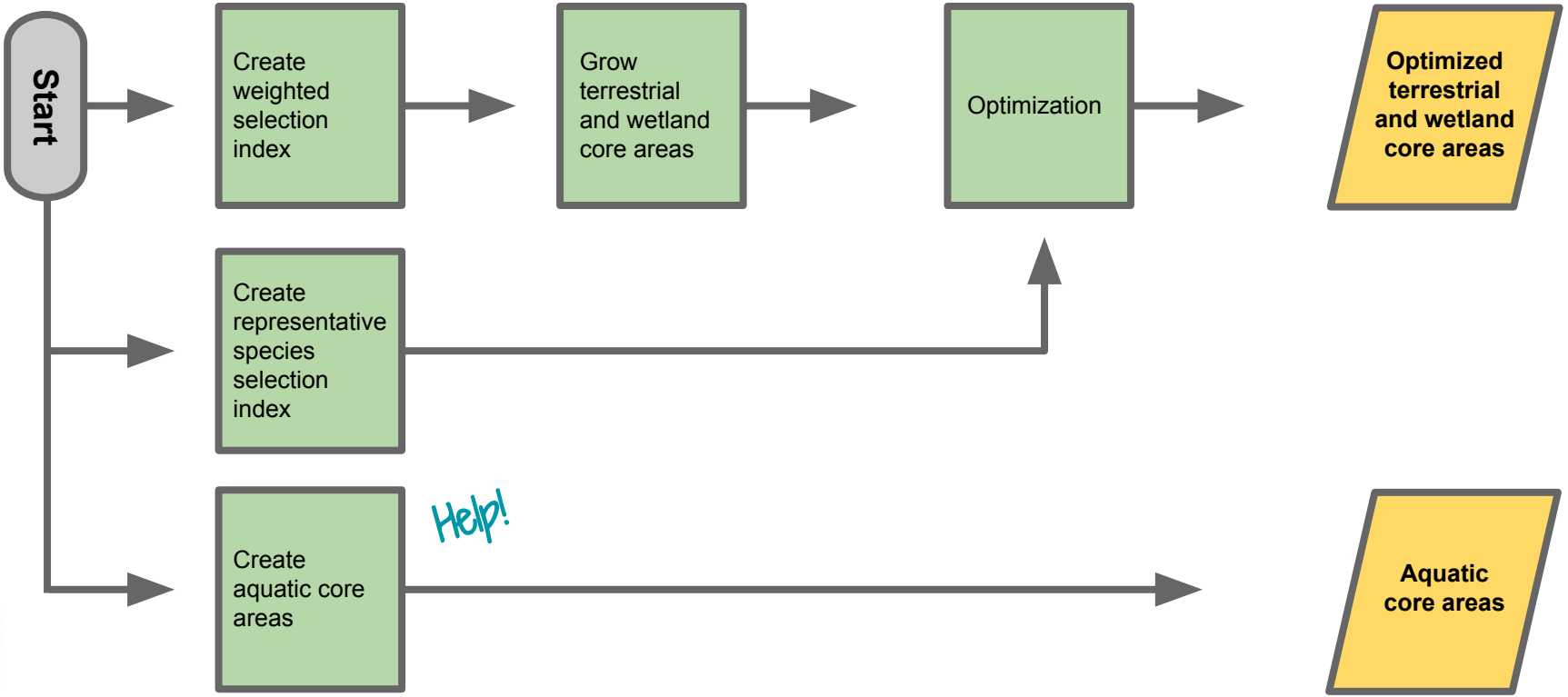
Core areas analysis



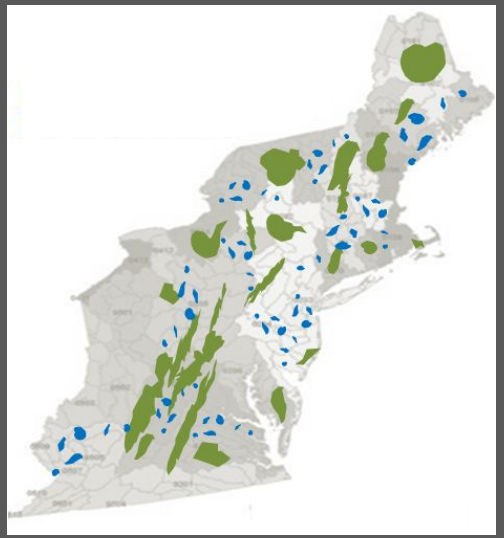
Core areas analysis



Core areas analysis

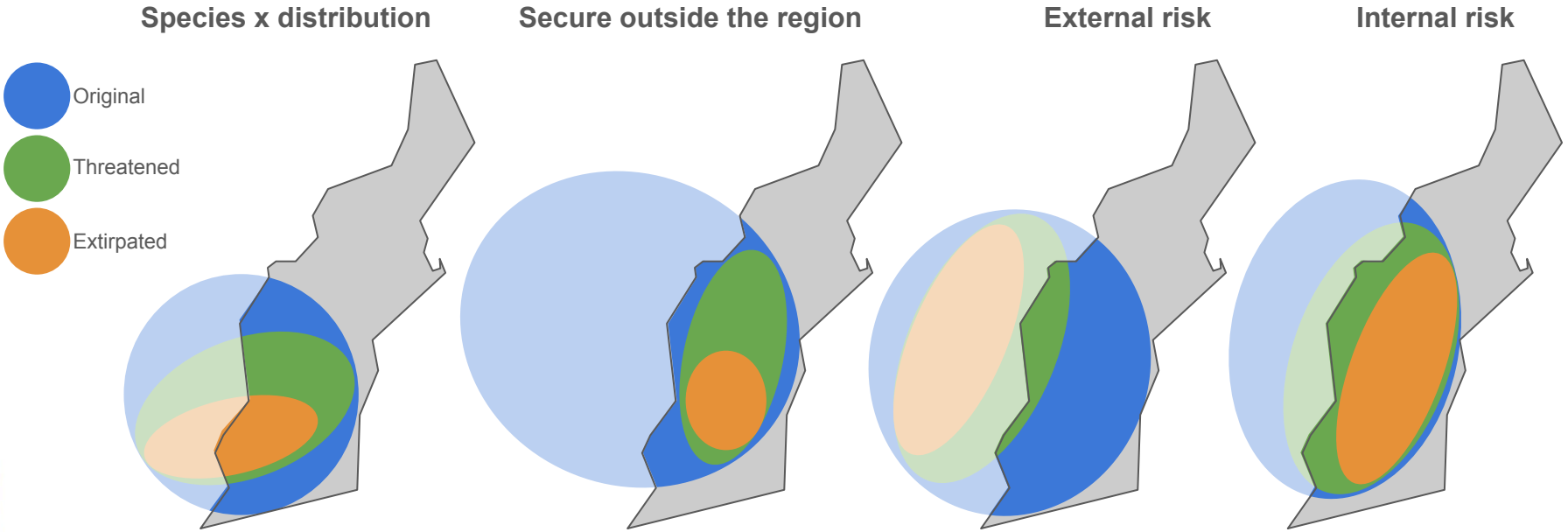


RSGCN habitats



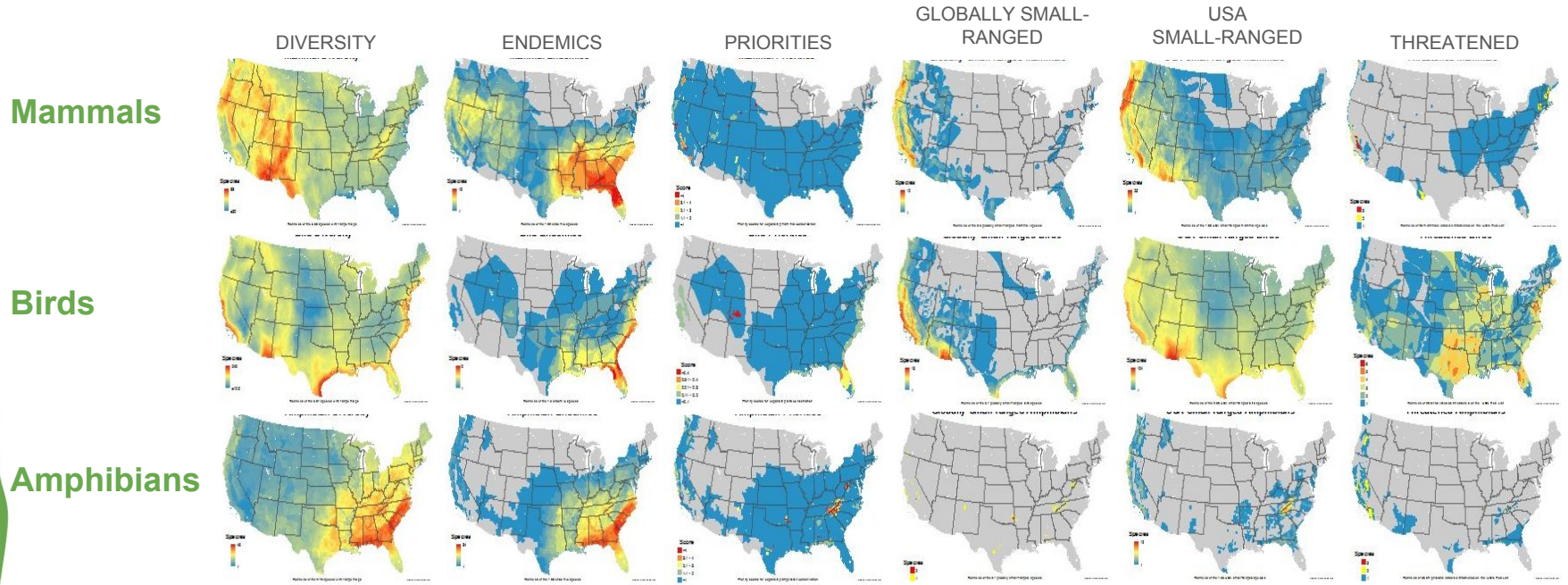
RSGCN: species status

Distribution analysis will weight species based on status



RSGCN habitat associations

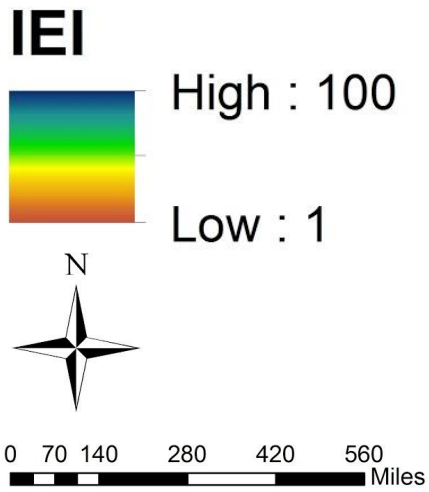
Habitat importance weights will be based on biodiversity, threat, etc.



Jenkins, CN, KS Van Houtan, SL Pimm, JO Sexton (2015) US protected lands mismatch biodiversity priorities. PNAS (Early Edition) www.pnas.org/cgi/doi/10.1073/pnas.1418034112

RSGCN habitat condition

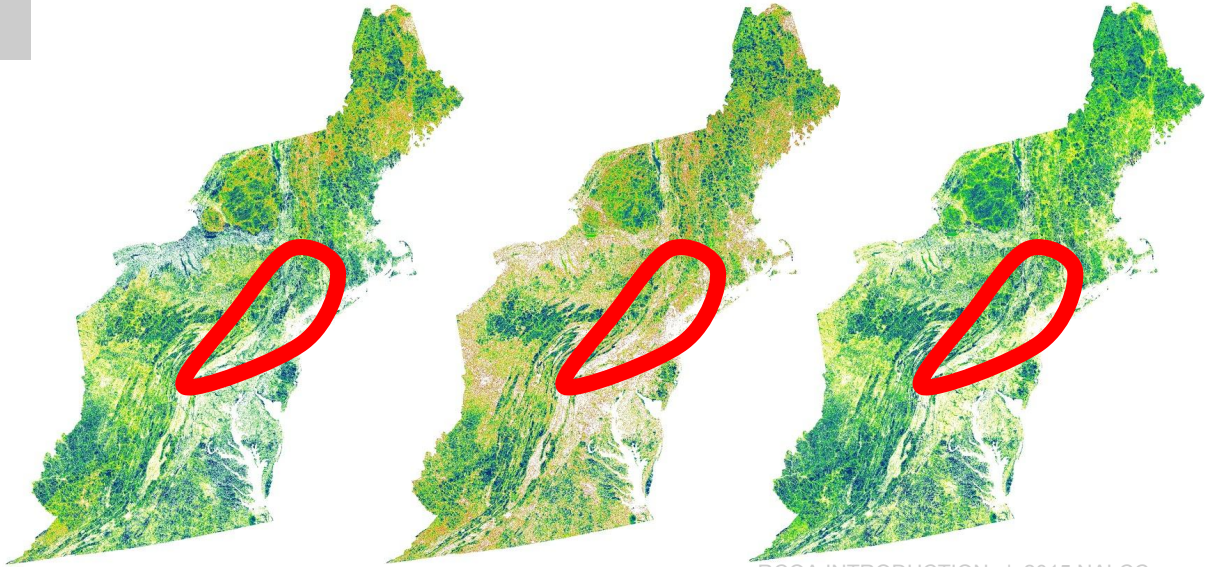
IEI and resilience could measure condition of weighted habitats



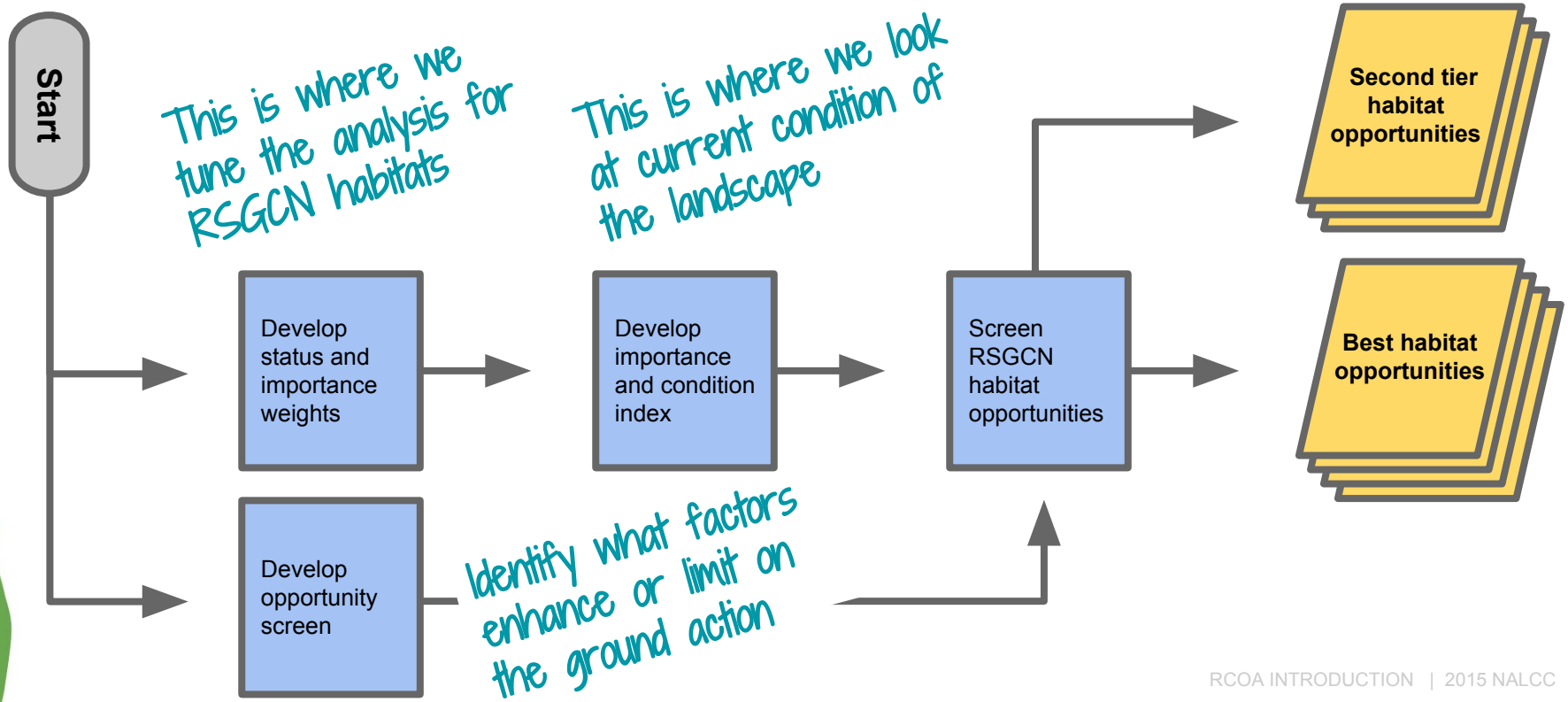
Weighted for RSGCN

Unweighted

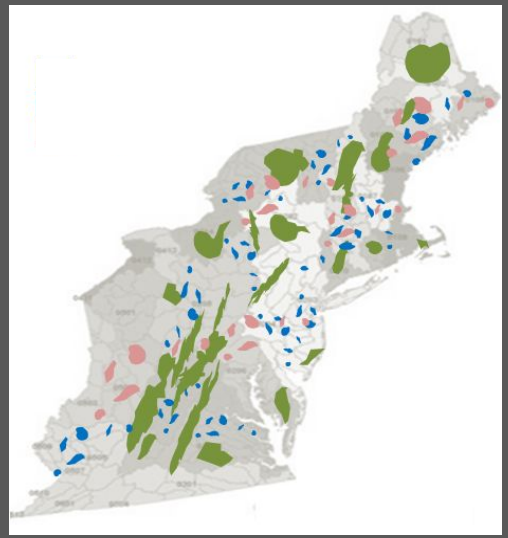
Weighted for cores



RSGCN habitats analysis



Restoration



Restoration analysis

Identifying restoration opportunities for RSGCN in strategic locations

Regenerate forest adjacent to high value habitats

Protect areas upstream of watersheds with diverse RSGCN communities

Find opportunities to connect multiple core areas

Which habitats and actions?

SWAPs identify key restoration opportunities...

- Rare ecological systems
- Early successional habitats
- Agricultural lands
- Degraded watersheds
- Fragmented waterways

Would benefit hundreds of RSGCN

Restoration analysis

Mapping at the HUC12 scale

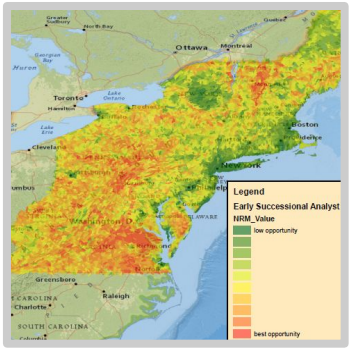
- Small enough to guide action to priority regions
- Coarse enough to protect the anonymity of individual landowners
- Many analysis already available using HUC12s

Restoration analysis

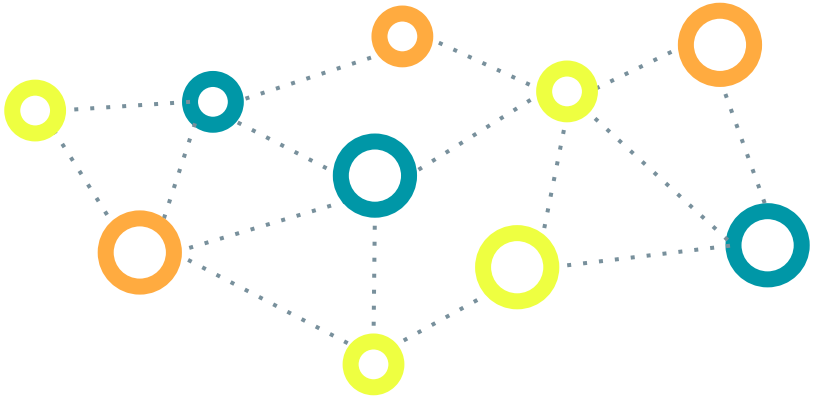
Three step process

First, summarize data on HUC12s

Using existing data, Wildlife Action Plans and other resources

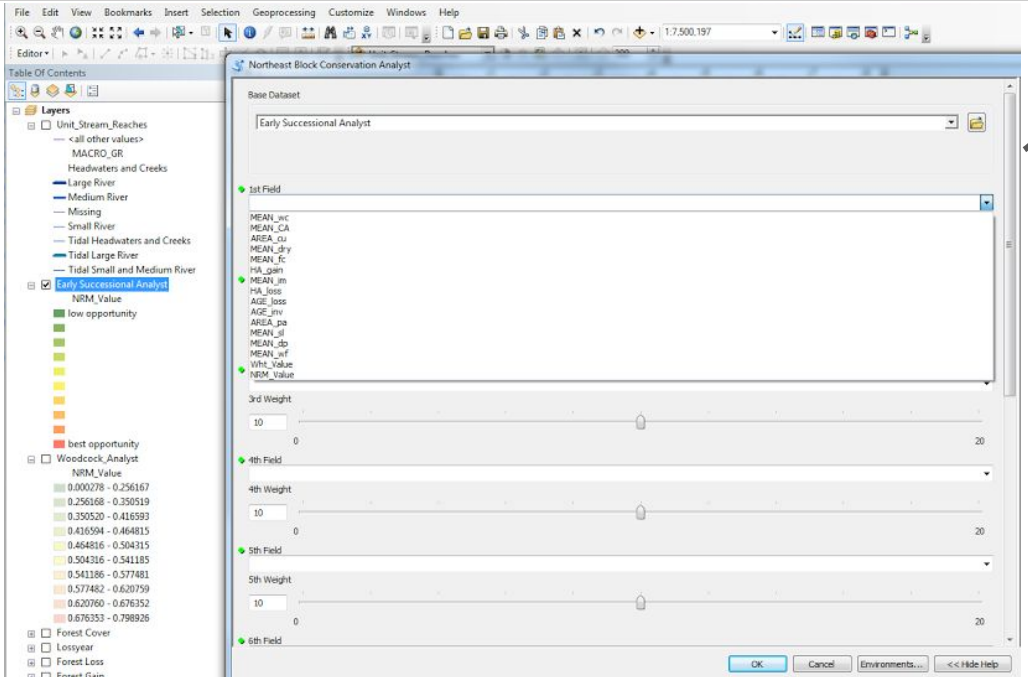


Second, develop restoration scenarios with partners and peers

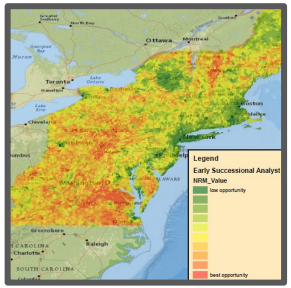


Restoration analysis

Third, team applies scenarios to weight and map factors



Restoration Priorities



Teams will develop weights to reflect scenarios

Restoration analysis

Five HUC12 restoration opportunity maps for...

- Ecological systems
- Early successional habitats
- Watershed and riparian buffers
- Agricultural land
- In-stream connectivity

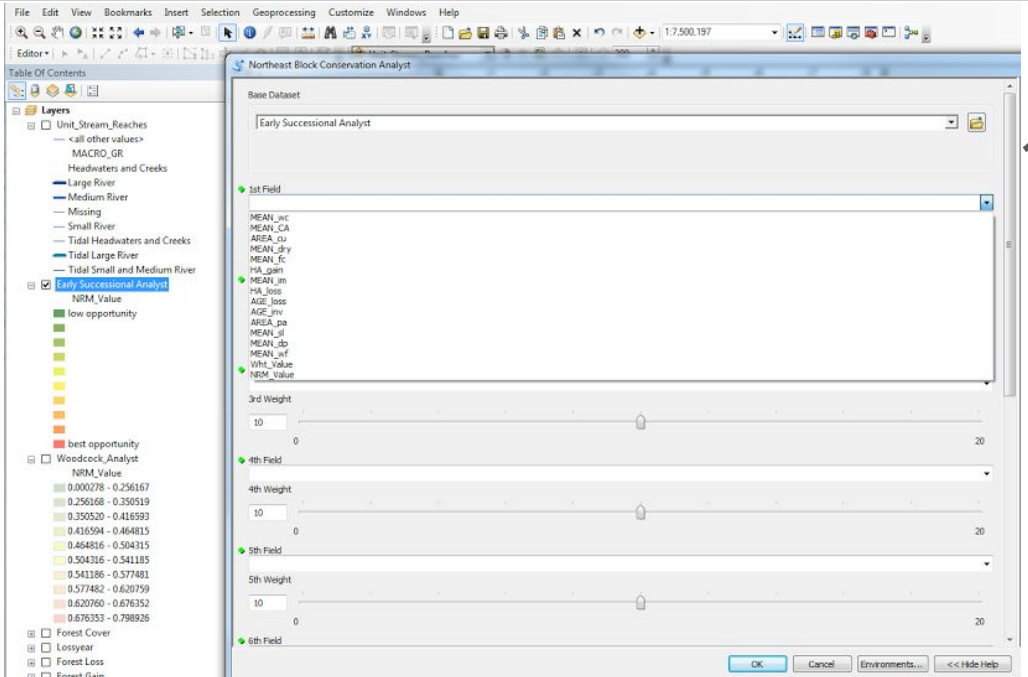




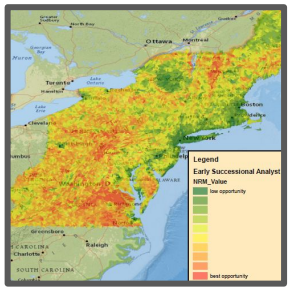
Send out for review, comments and revision

Restoration analysis

AND users can customize weights for their own scenarios

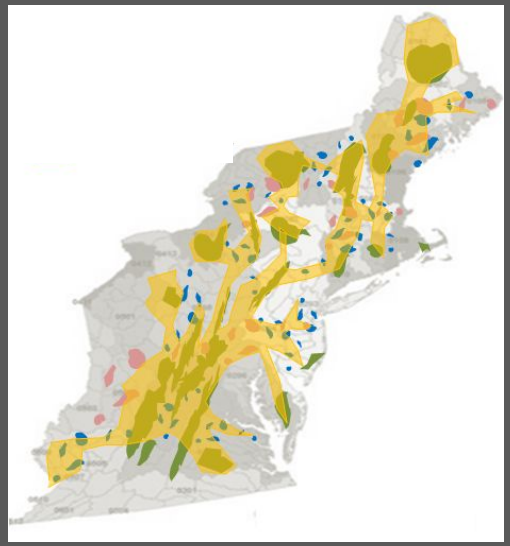


CUSTOMIZED MAP



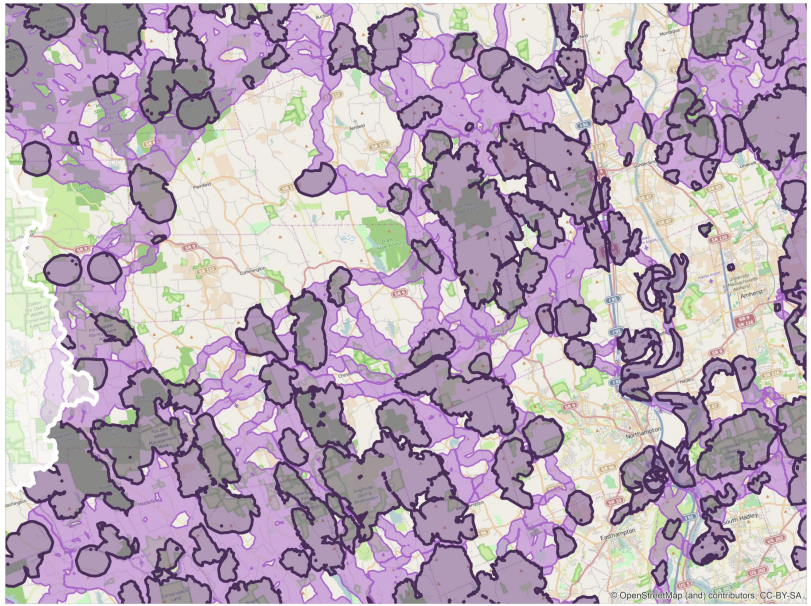
Adjust weights to your needs

Connectivity

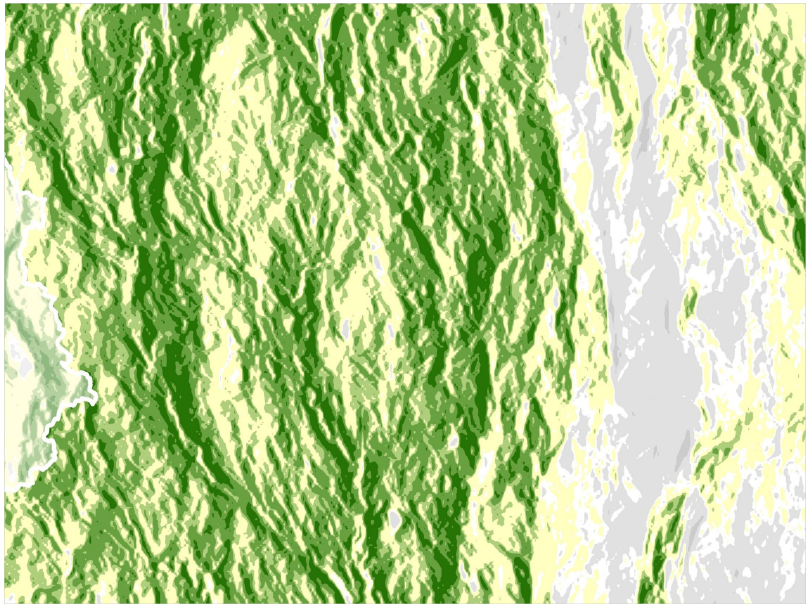


Connectivity analysis

Node to node corridors

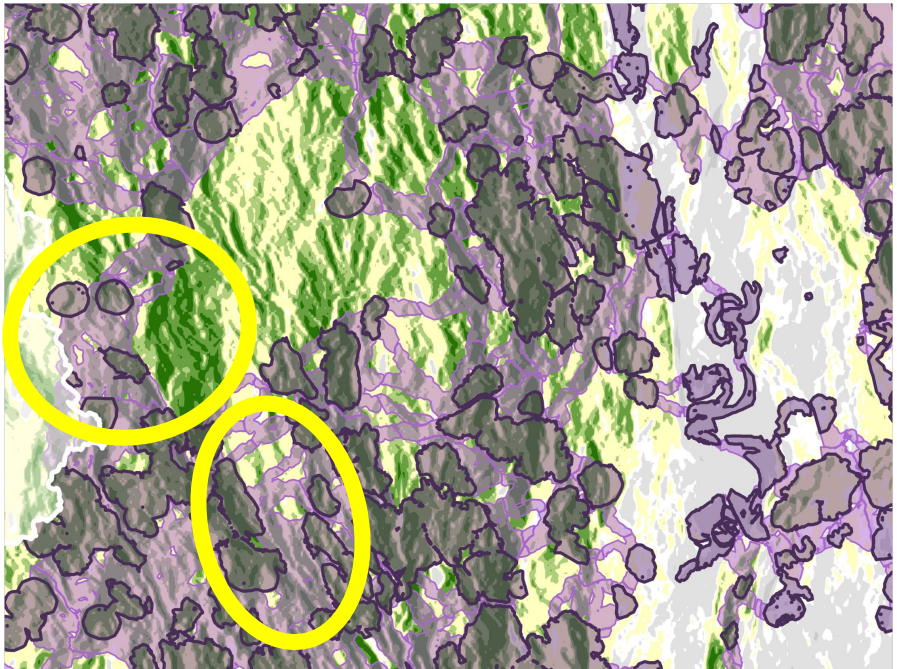


Global wall to wall permeability



Connectivity analysis

Node to node corridors versus global wall to wall permeability



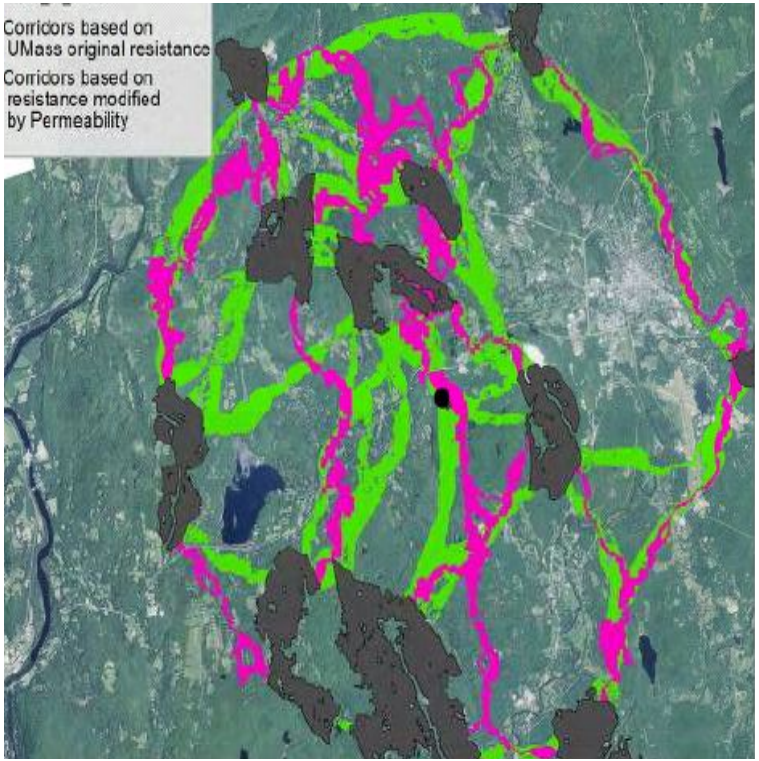
Logical regional flow bypassed

Connectivity analysis

Regional connectivity corridors connecting nearby forest cores

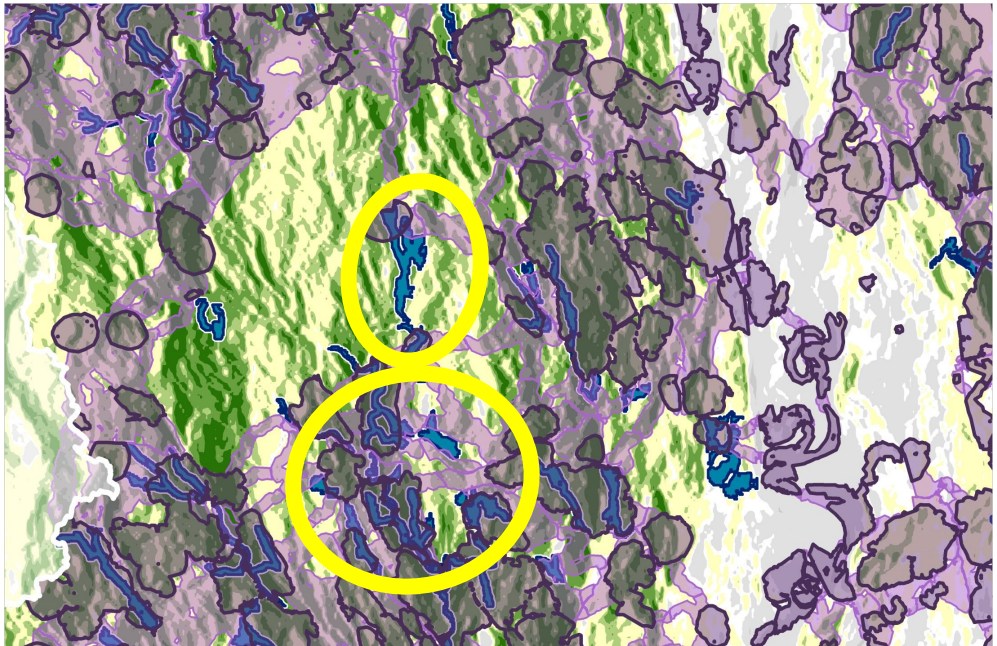
- Forest in a core area
- Corridors based on UMass resistance
- Corridors with resistance modified by TNC permeability

Gives us a connected network influenced by regional patterns



Connectivity analysis

Riparian climate corridors



Riparian corridors compliment existing terrestrial based corridors

Connectivity analysis

Regional pinch points bottlenecks for species flow

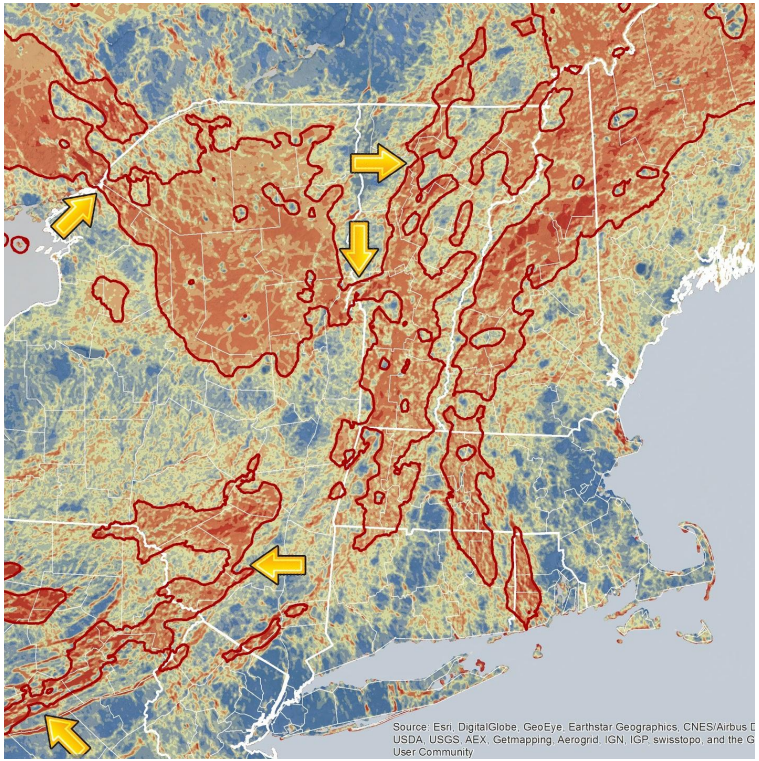
Anthropogenic Resistence Flow

Barrier | Diffuse Flow | Concentrated Flow (bottlenecks)

Area of Concentrated Flow

Example Pinch Point Locations

Highlights irreplaceable locations important in connecting large natural areas



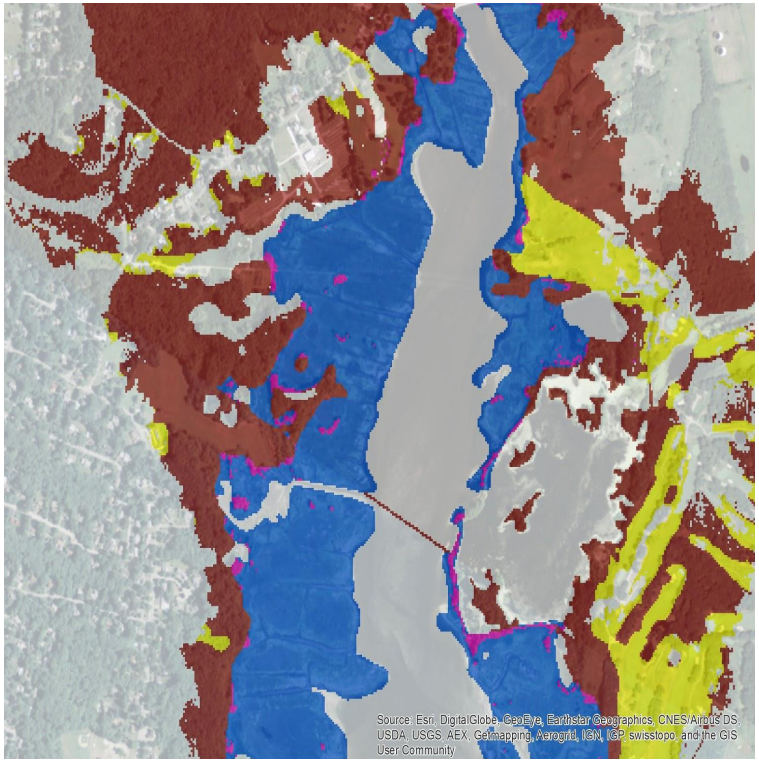
Connectivity analysis

Tidal marsh opportunities

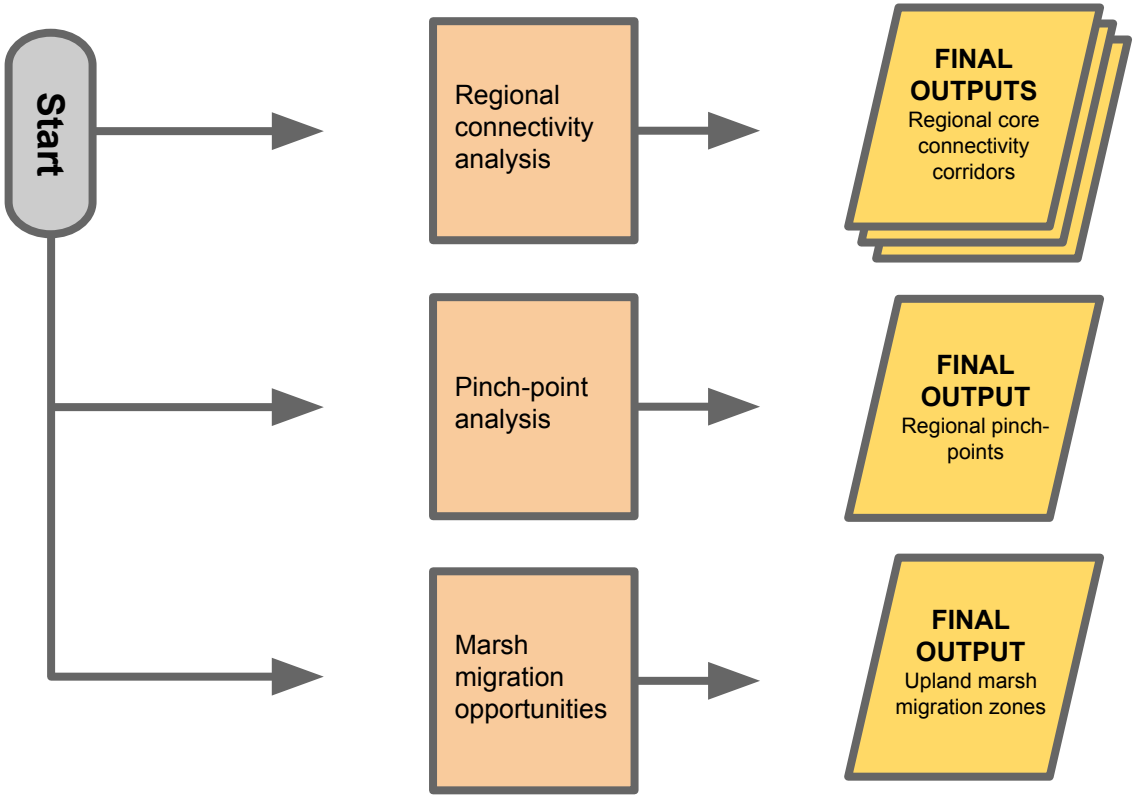
5 foot sea level rise model

- Restoration opportunity: marsh at risk of loss to inundation
- Restoration opportunity: marsh migration path over developed land
- Conservation opportunity: upland migration corridor

Connecting current habitat to potential future habitat



Connectivity analysis



Next steps

Implementation

1. Begin reviewing methods
2. Team call 12/9
3. Participation on sub-teams to plan/implement mapping
4. Monthly calls through July 2016
5. 2 workshops to review results

How you can be involved

Help integrate ongoing partner efforts and products.

Examples:

- SWAPs
- PARCAs
- North Atlantic Aquatic Connectivity Collaborative
- Brook Trout Joint Venture/Brook Trout Projects
  - Brook trout patches, catchments
  - Brook trout probability of occurrence under current and increased temps.
  - Stream temperature sensitivity

How you can be involved

Provide collaborative GIS support.

- Assist with mapping and management of data.
- Facilitate technical support within your organization.

How you can be involved

Serve on a working sub-team.

Restoration Team: help develop restoration scenarios

- In-stream connectivity
- Riparian zones and water quality
- Early successional habitat
- Agricultural land restoration
- Unique ecological systems

How you can be involved

Serve on a working sub-team.

RSGCN Habitat Team:

- Evaluate species status weighting
- Develop habitat weights
- Identify threat and opportunity metrics
- Help review of draft results

How you can be involved

Serve on a working sub-team.

Connectivity Team:

- Develop methods to simplify and map results of complex models
- Provide input on salt marsh migration
- Help review draft results

How you can be involved

Serve on a working sub-team.

Terrestrial Cores Team:

- Develop ecosystem weights that reflect biodiversity and ecosystem services
- Review representative species models
- Help review draft results

How you can be involved

Serve on a working sub-team.

Aquatic Cores Team:

- Evaluate datasets proposed for core areas
  - ecological integrity
  - resilient networks
  - fish species occurrence or probability
- Help review of draft results

Questions ?