Eastern Brook Trout Joint Venture (EBTJV) Update

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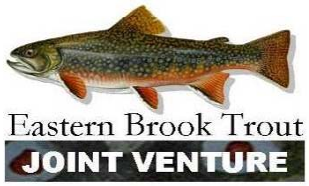
NFHAB Board Meeting April 17, 2012



Introduction

Assessment Case History

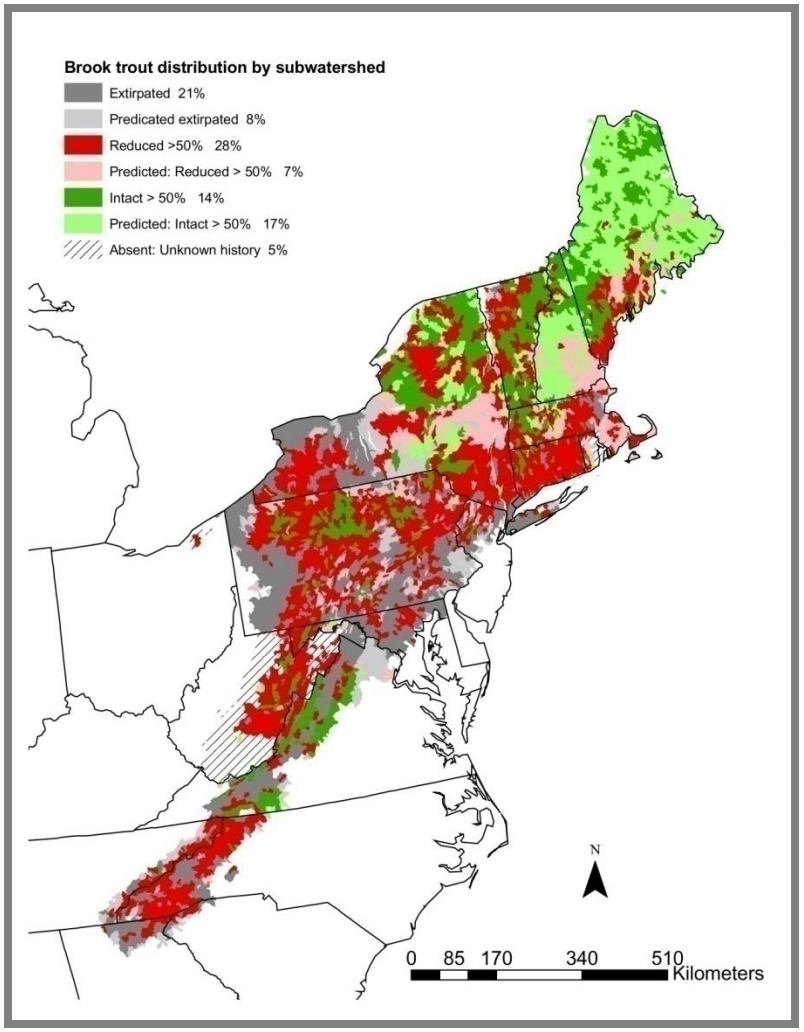
1. Evaluate the distribution of brook trout for the 2005 EBTJV assessment.

2. Context:

   -lots of states

   -inconsistent fine scale data

3. Hudy et al. 2008 NAJFM 28:1069-1085



Eastern Brook Trout
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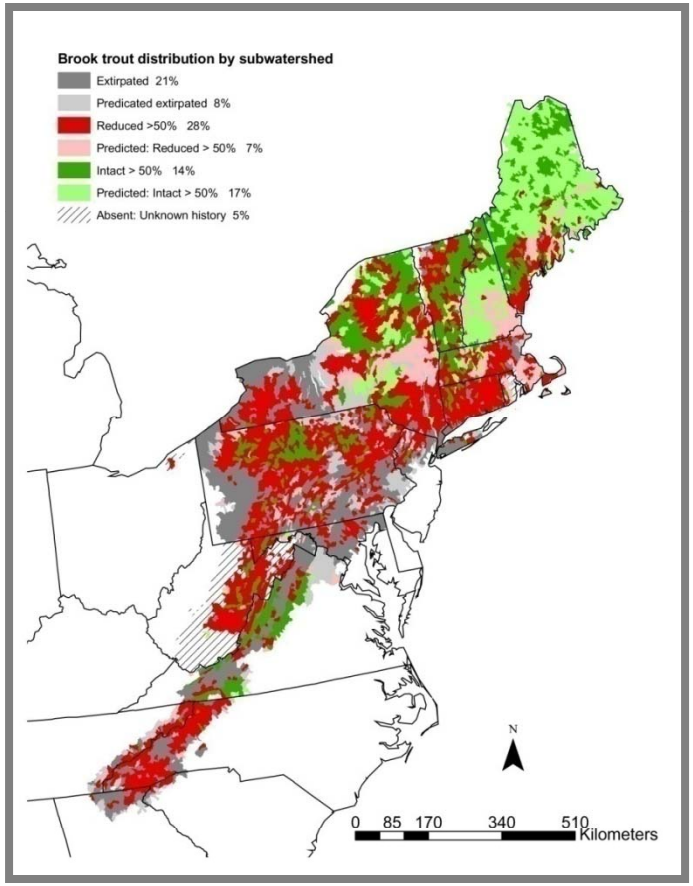
Brook Trout Range

- 5,001 subwatersheds
  - 1,660 intact (green)
  - 1,859 reduced (red)
  - 1,482 extirpated (gray)



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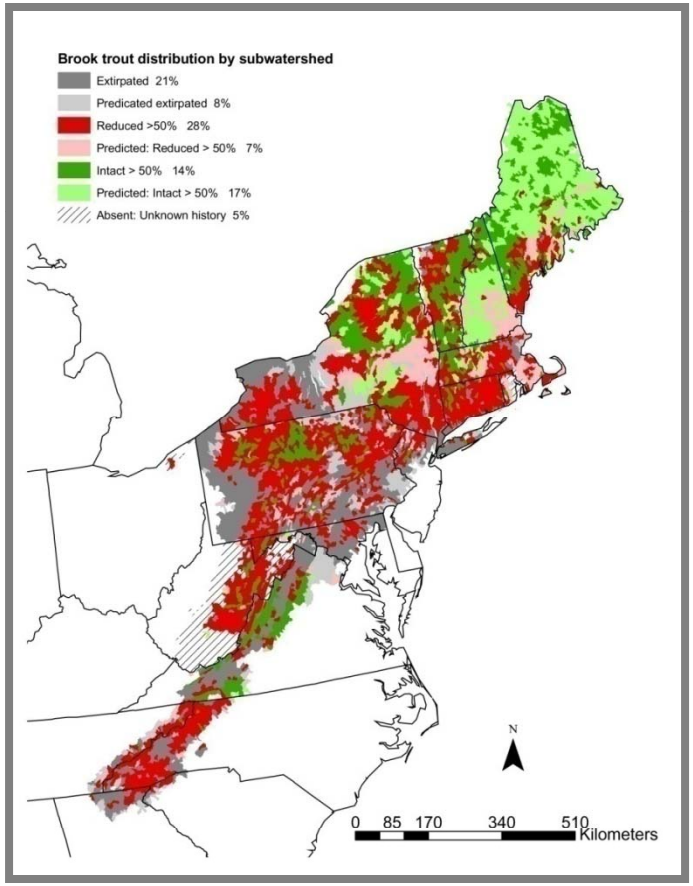
CART Model : 73 % correct prediction rate

1. % Forest
2. Acid Deposition
3. % Agriculture
4. Road Density
5. % Forest Riparian



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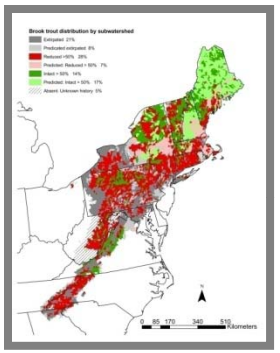
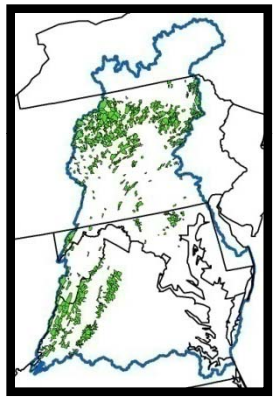
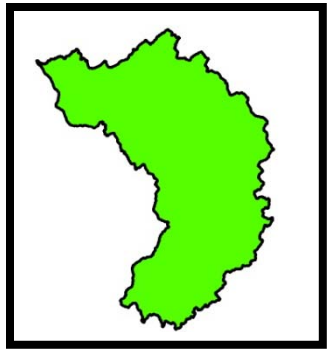
Matching Question to Scale ?

Are we moving the "needle" for wild brook trout?







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Assessment Scales

Sub-basins (4th HUC; 8 digit)

53 (avg size= 254,172 ha)

Watersheds (5th HUC; 10 digit)

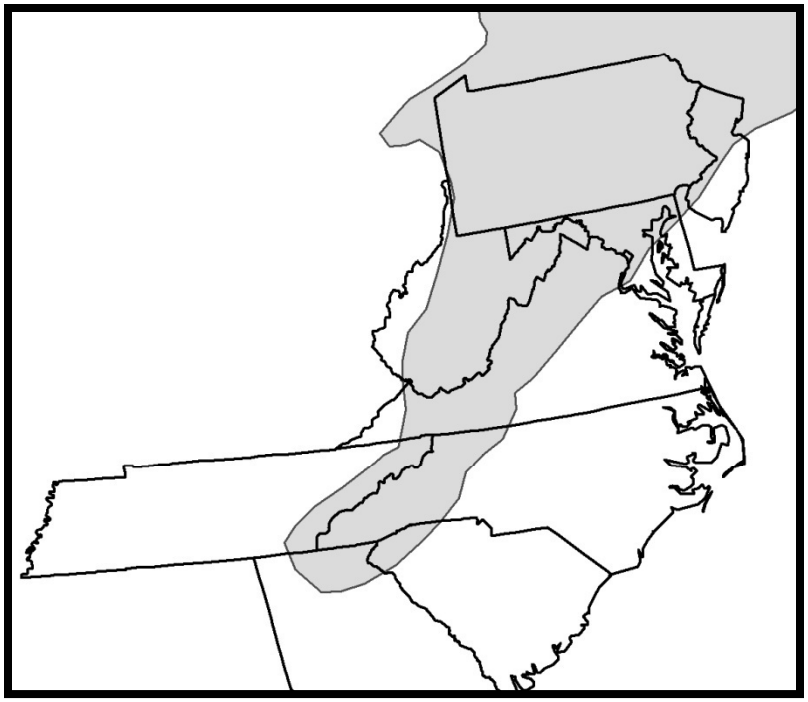
690 (avg size = 41,201 ha)

Subwatersheds (6th HUC; 12 digit)

3,079 (avg size = 8,879 ha)

Catchments (14 digit ?)

124,688 (avg size = 237 ha)



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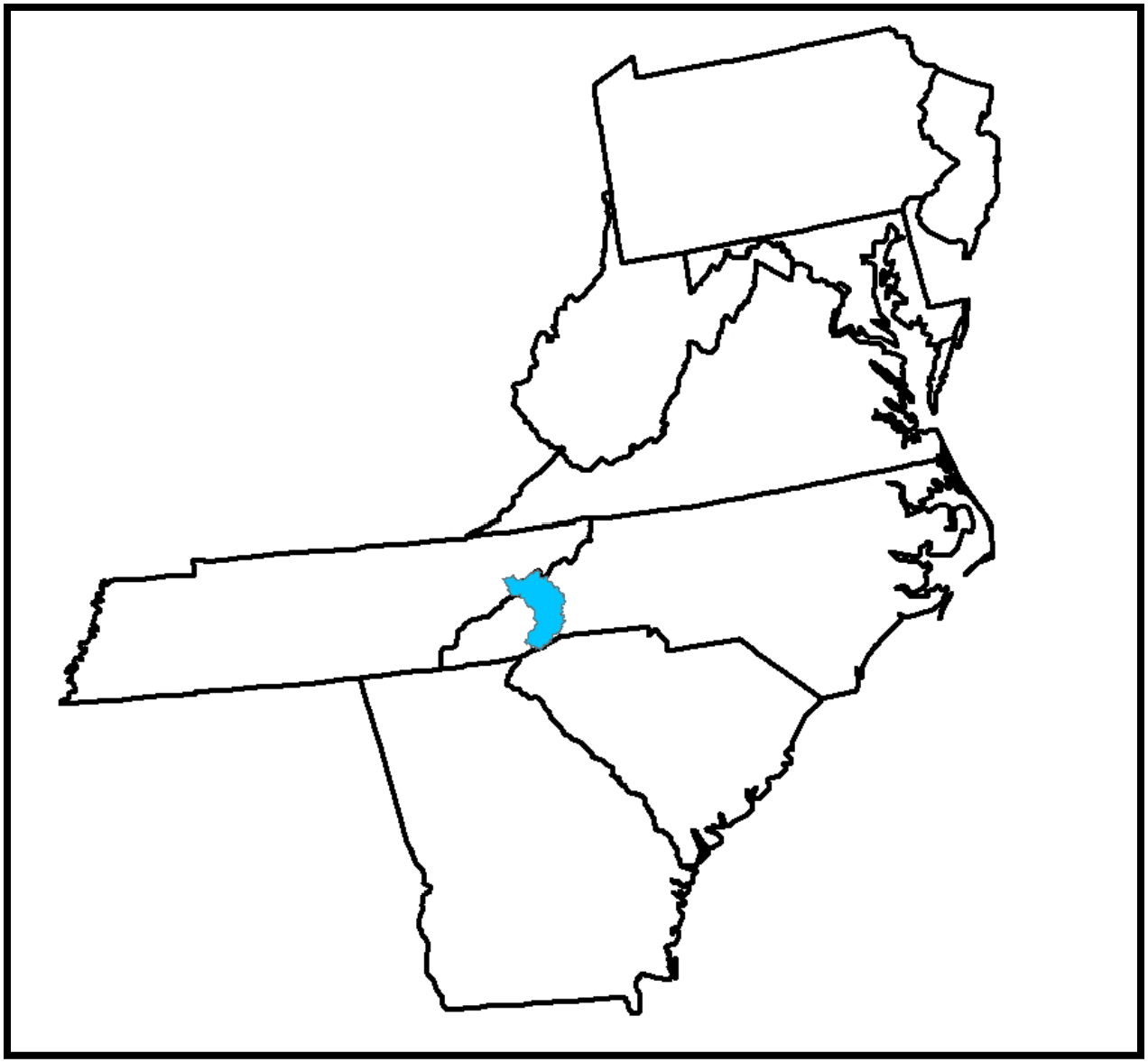

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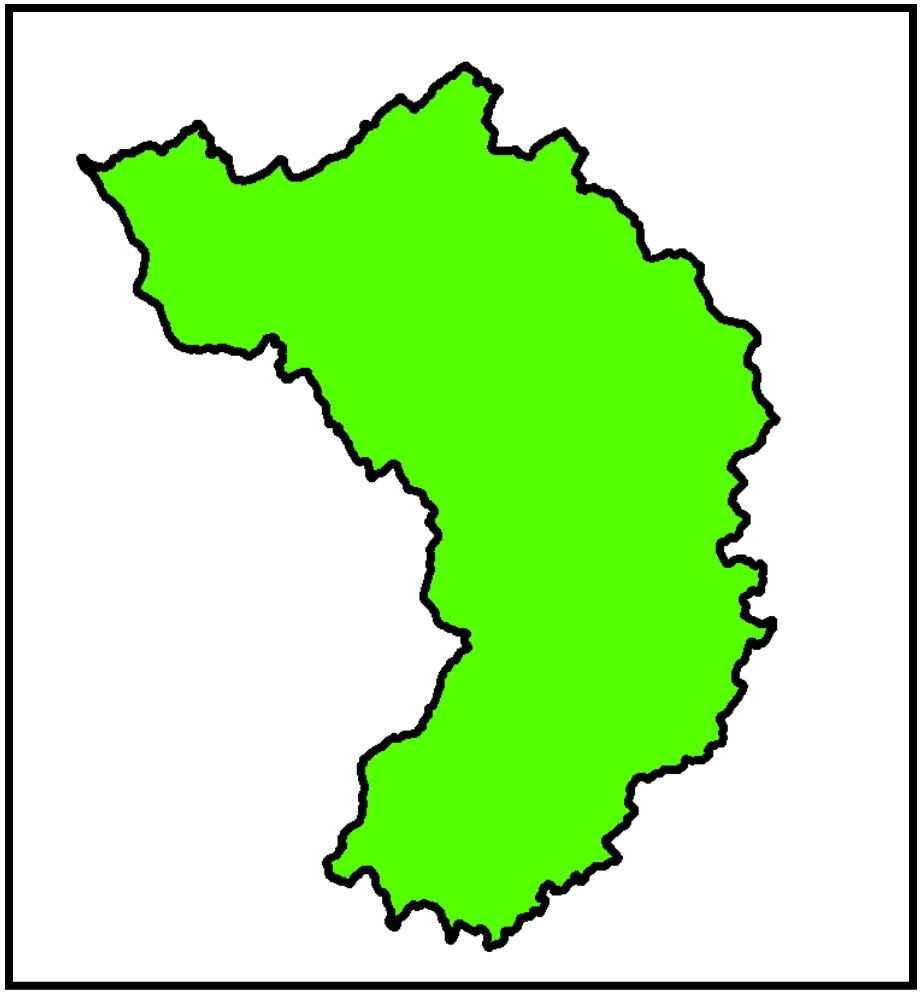
Sub-basins (4th HUC)
100%



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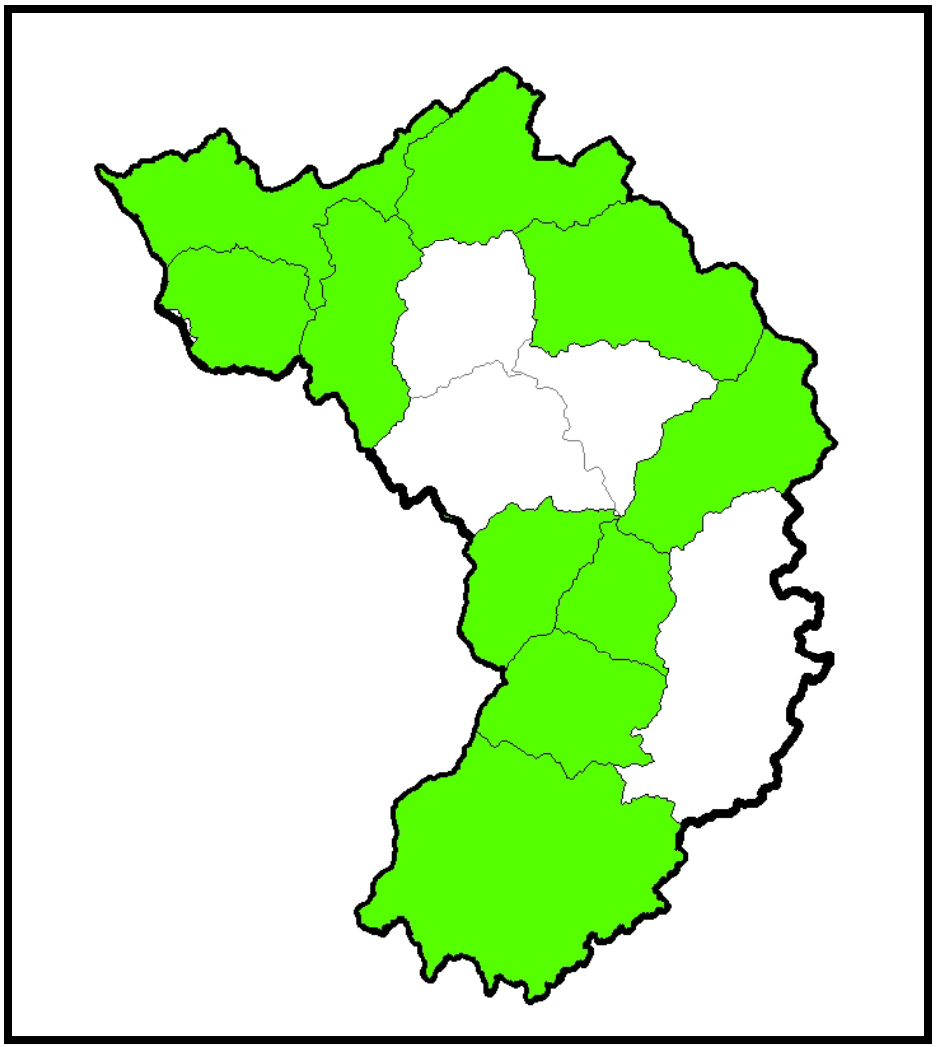
Watersheds (5th HUC)
76%



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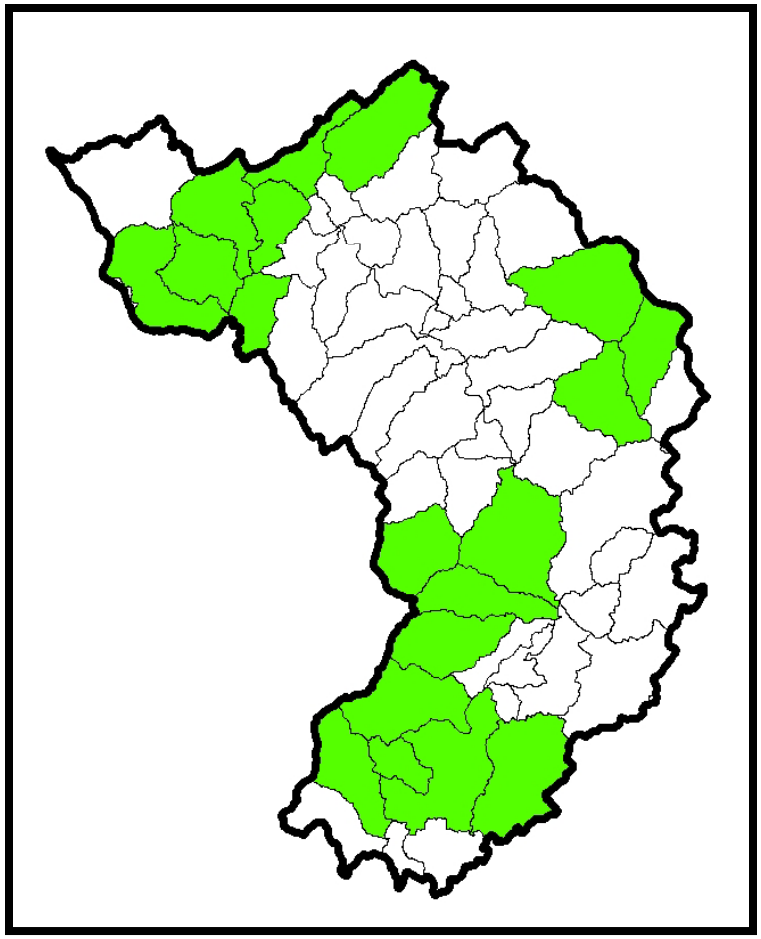
Subwatersheds (6th HUC)
33%



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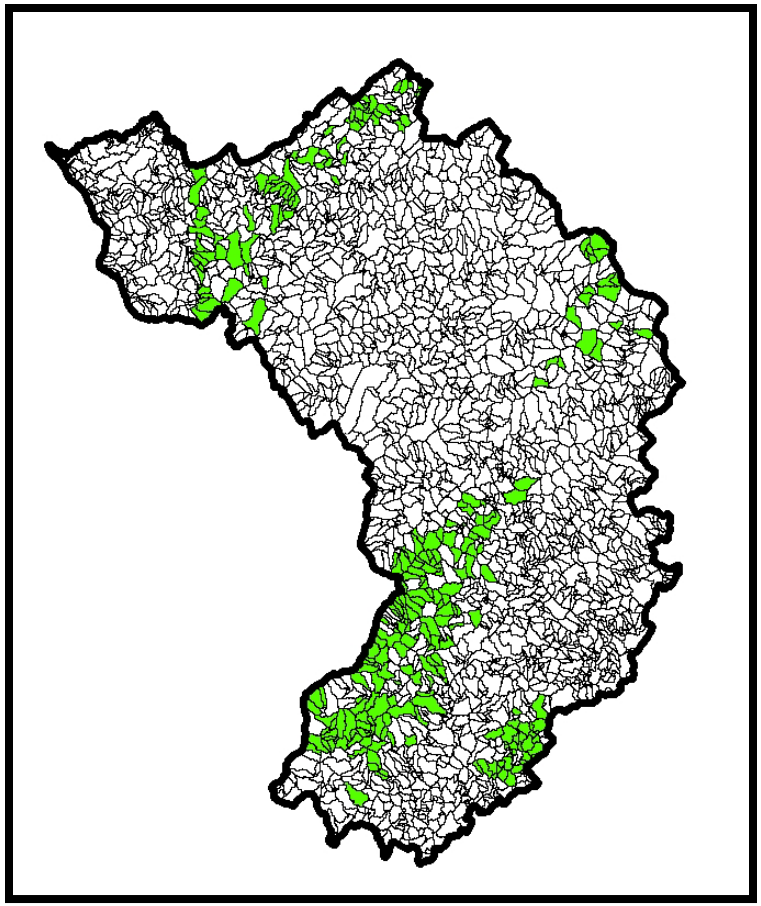
Catchments
11%



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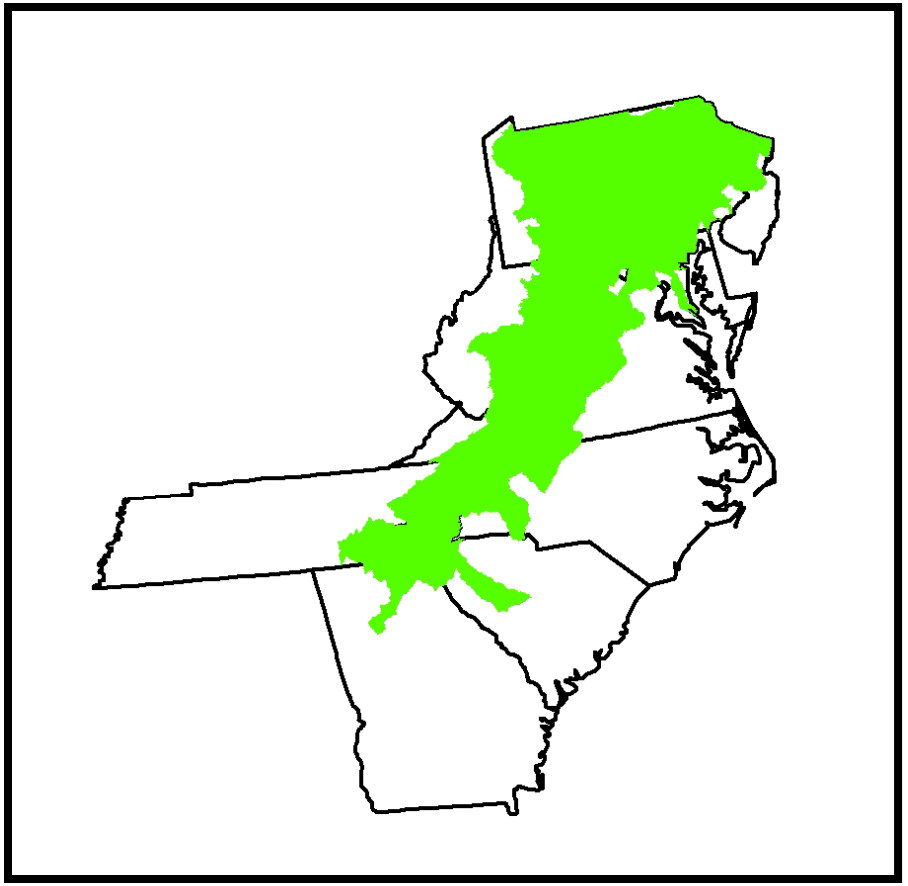
Brook Trout Distribution: Sub-basin (4th HUC)

88% of 85 sub-basins

"Brook trout are well distributed throughout their native range".



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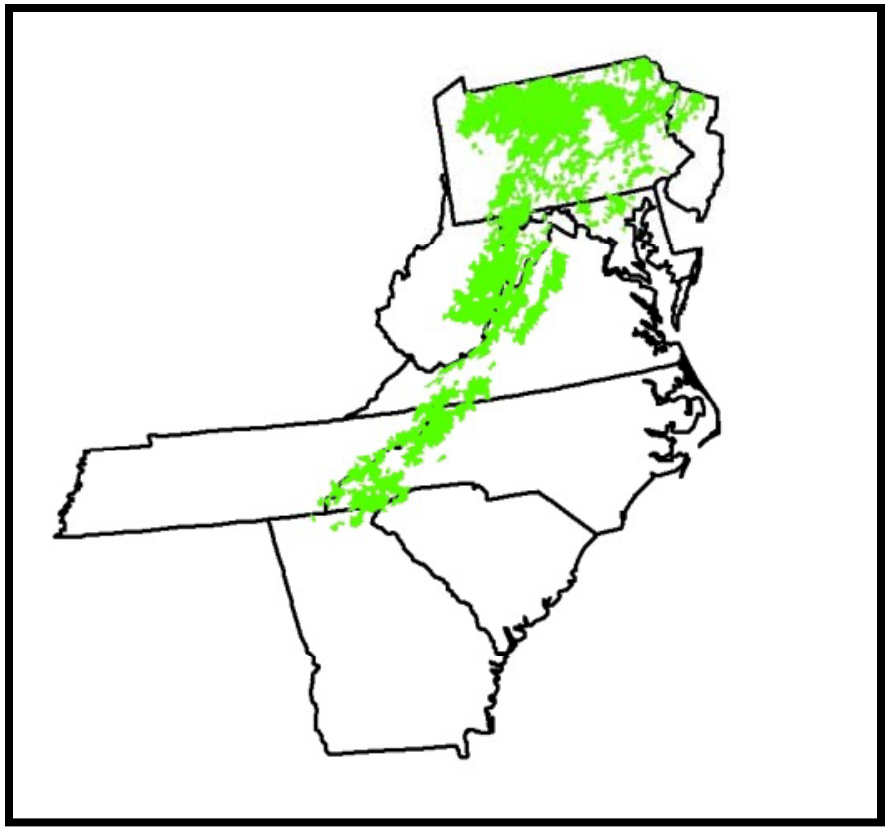
Brook Trout Distribution: Watershed (5th HUC)

72% of 690 watersheds



"There have been some losses of brook trout but they are still found in approximately 75% of their range".

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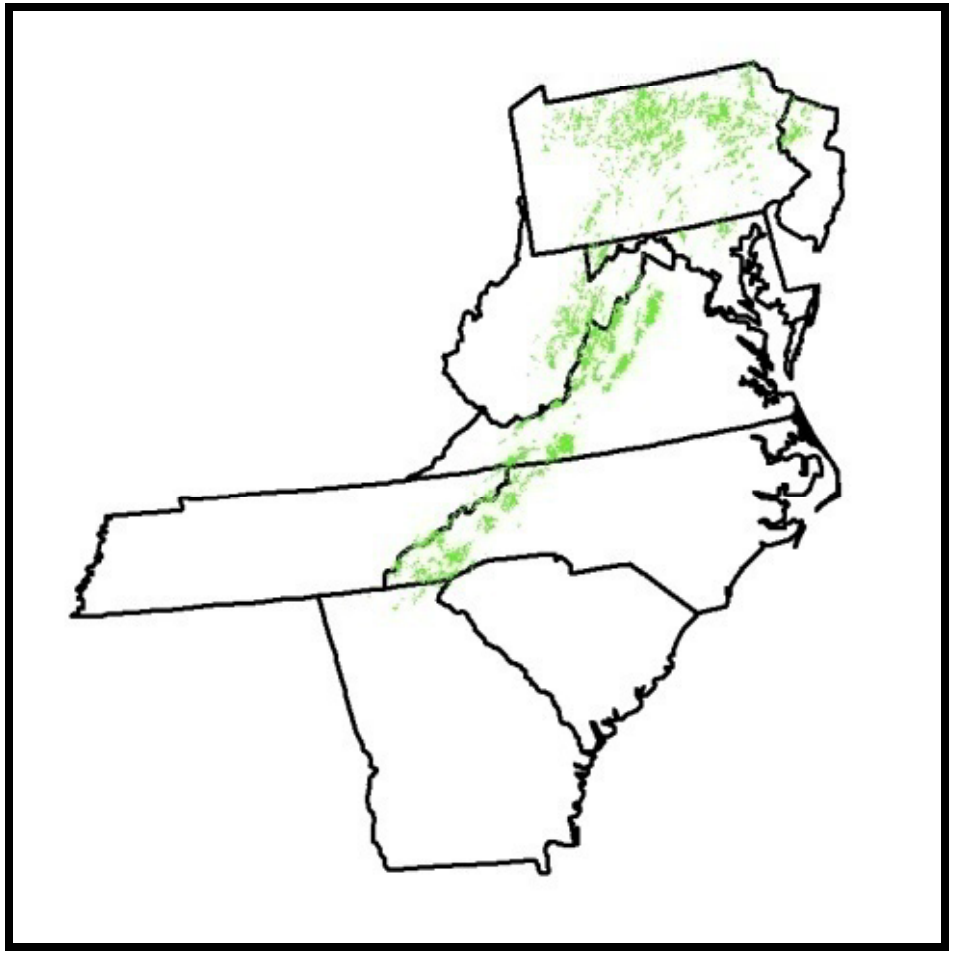
Brook Trout Distribution: Subwatershed (6th HUC)

47 % of 3,079 subwatersheds

"Brook trout have been extirpated from over half of their historic subwatersheds".



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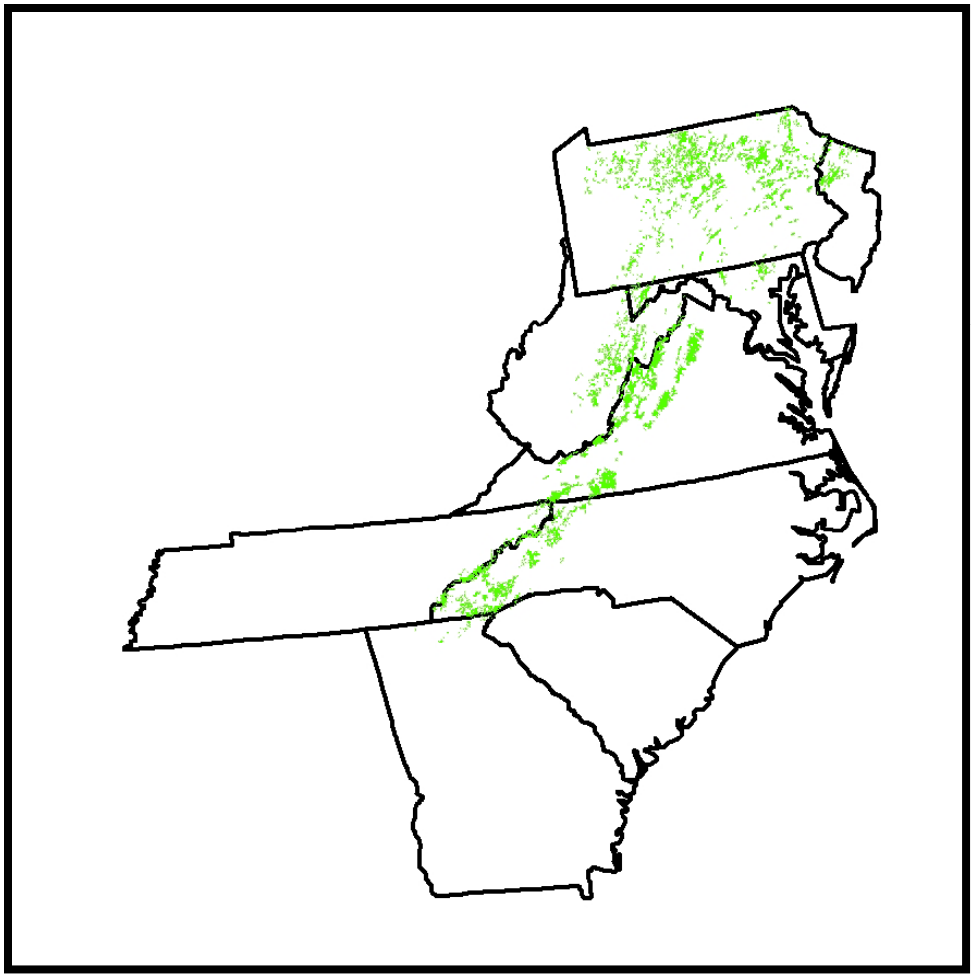
Brook Trout Distribution: Catchments

11 % of 124,688 catchments

"Brook trout do not occupy 90% of their historic catchments"



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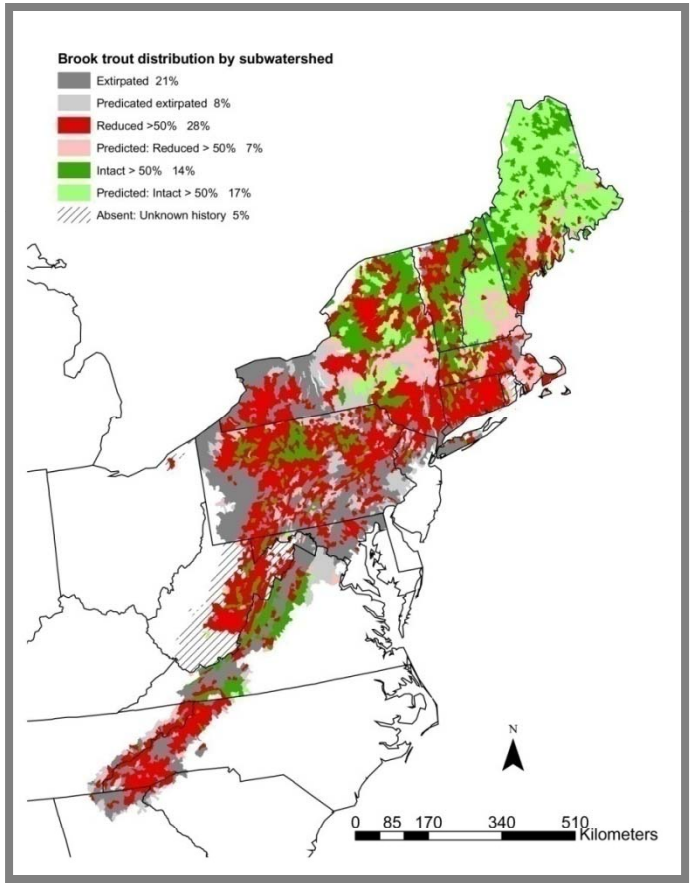
Fine Scale Occupancy Assessment

- 9,059 catchments: Allopatric Brook Trout Populations
- 9,321 catchments: Sympatric Populations (with Brown or Rainbow Trout)
- 9,971 catchments: Only Exotic Trout Species

2012 EBTJV Assessment Update

- 54% subwatersheds completed
- 11% have changed
  - 118 + intact (green)
  - -(306) reduced (red)
  - 188+ extirpated (gray)



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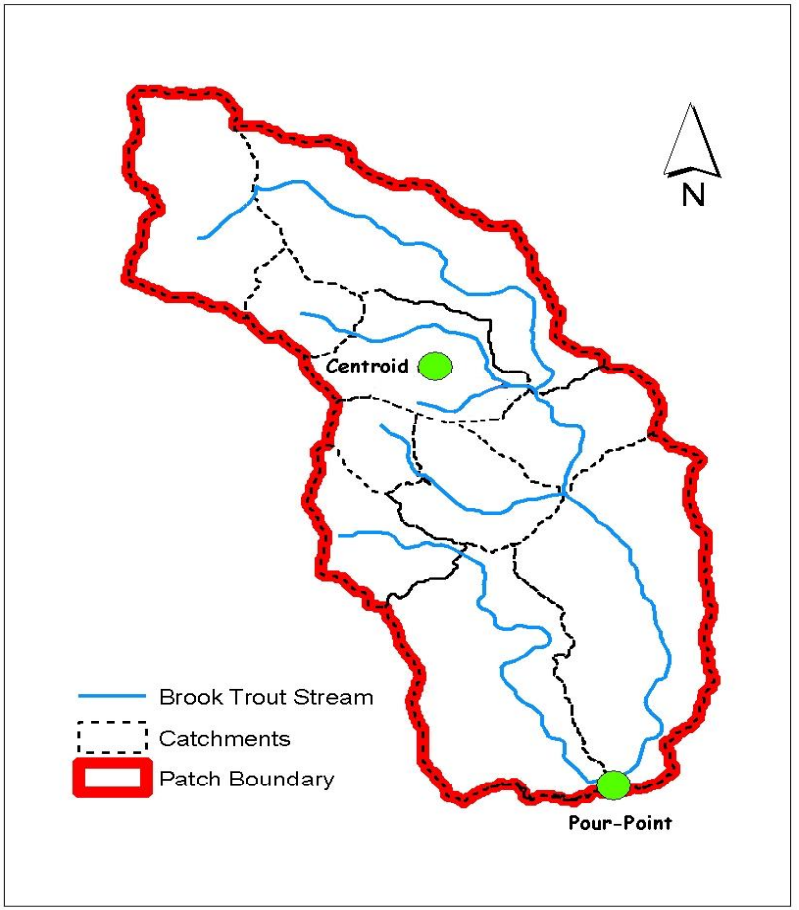
Adaptive
Management:
Patch Scale?

Identification of Brook Trout "Patches"

- "Patch"= a group of contiguous catchments occupied by wild brook trout.
- Patches not connected physically
  - Dams, warm water habitat, downstream invasive species
- Assumed to be genetically isolated populations



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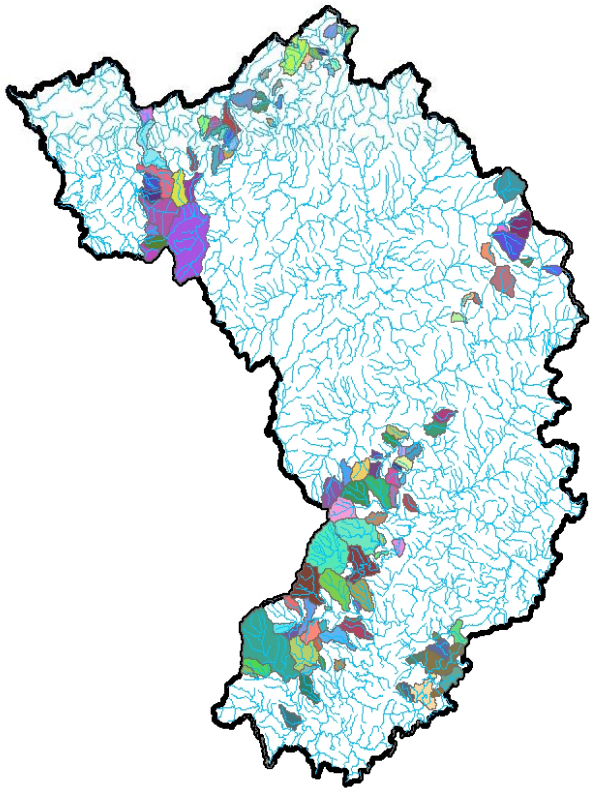
Patches



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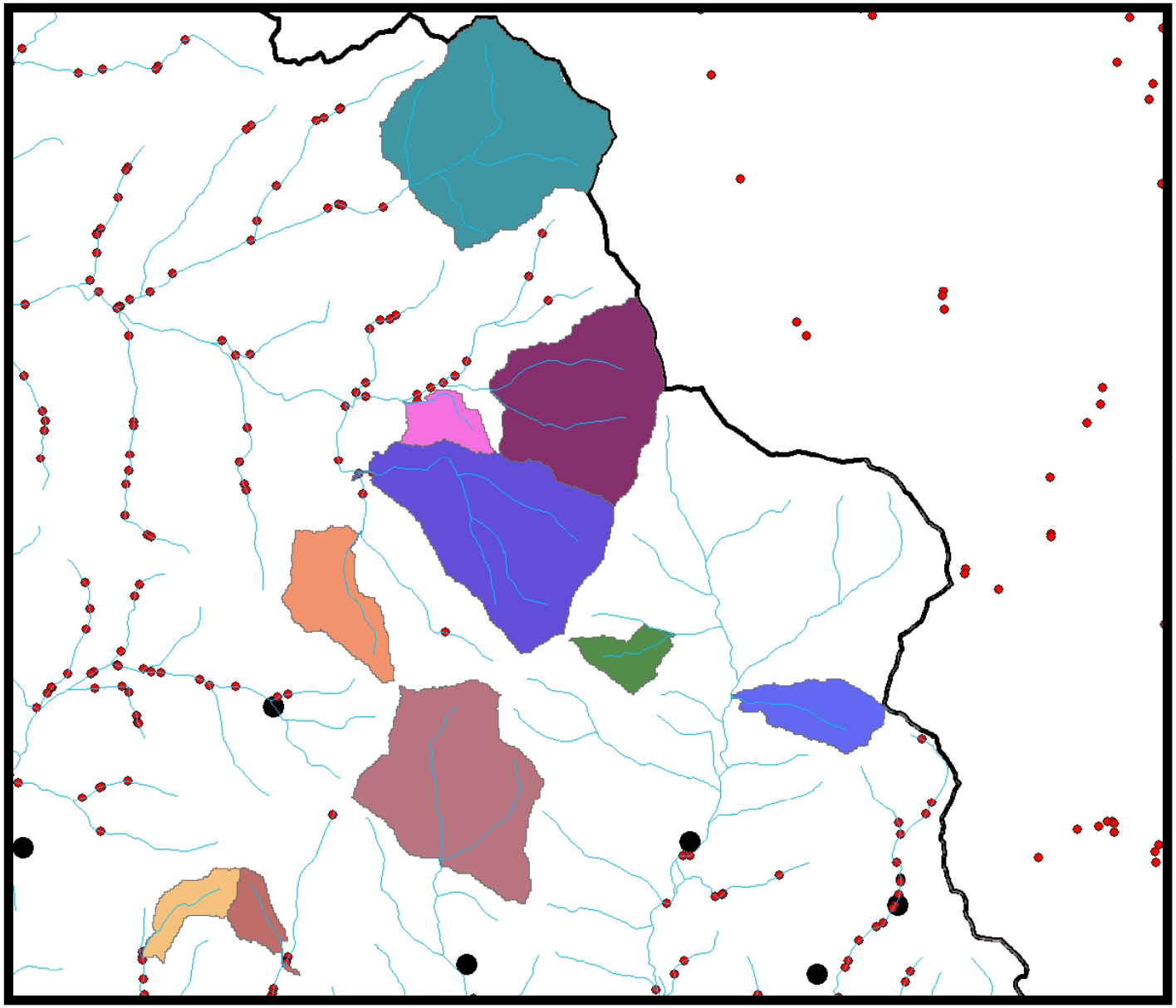

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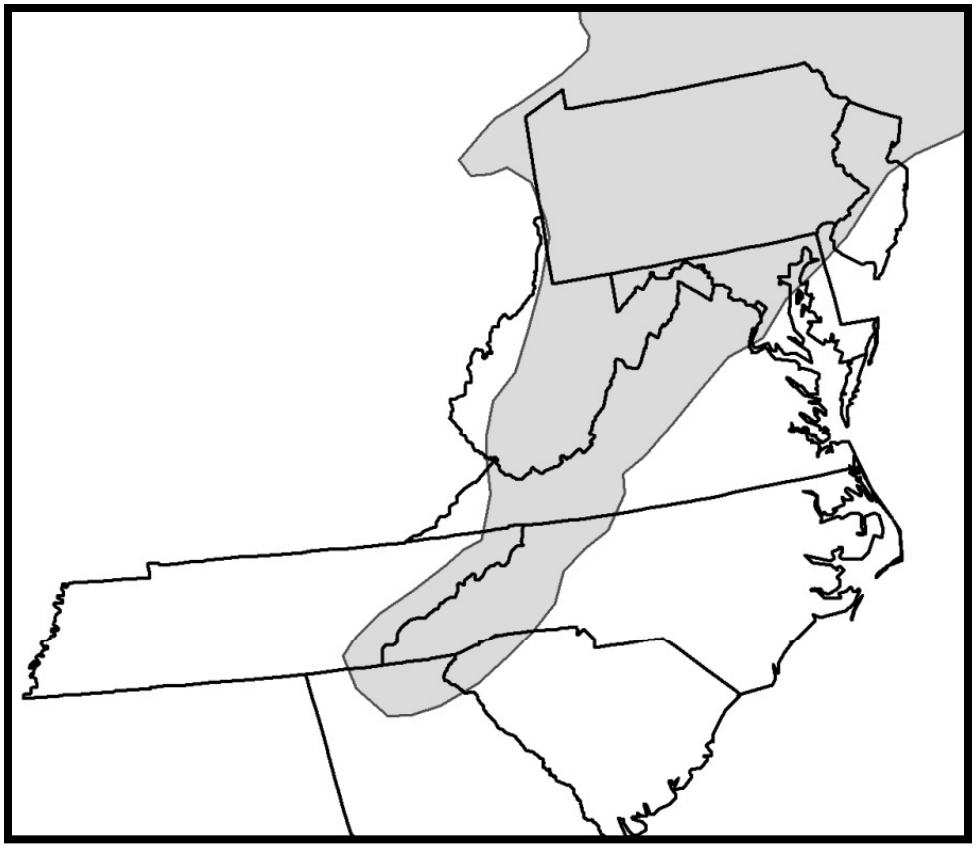
Brook trout Patches (n= 2,732)



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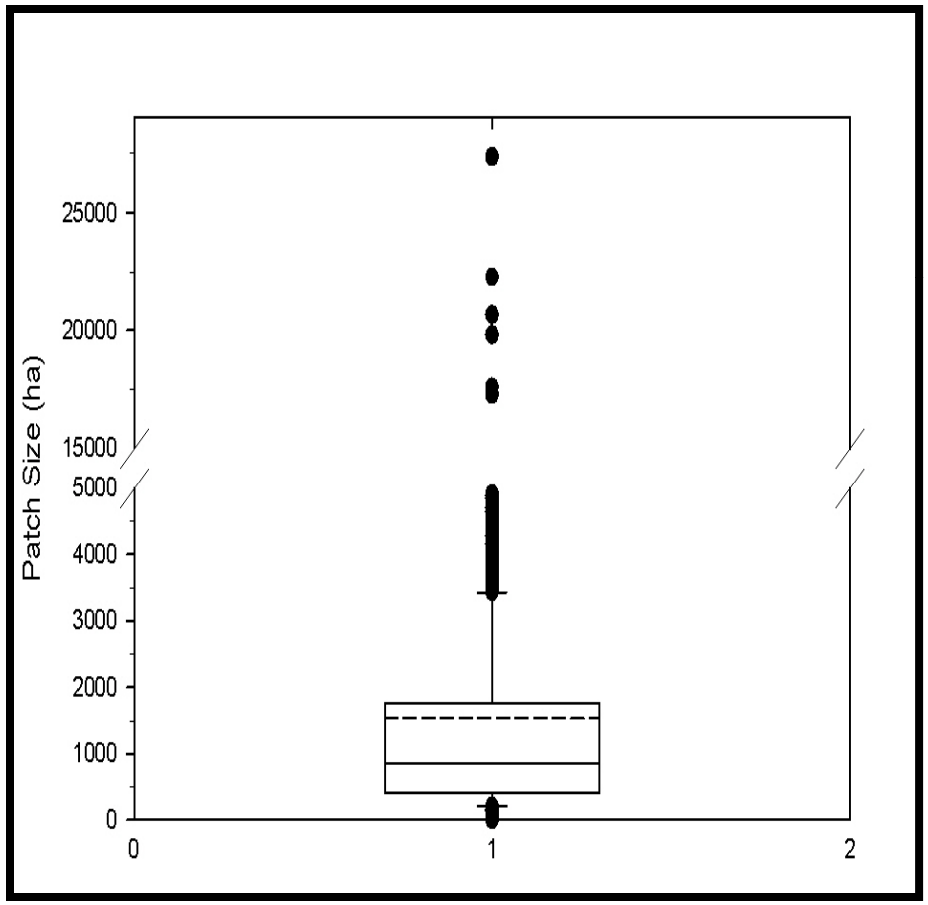
Patch - "Populations"

- Number of patches
  2,732
- Average size
  1,839 ha
- Median size
  855 ha



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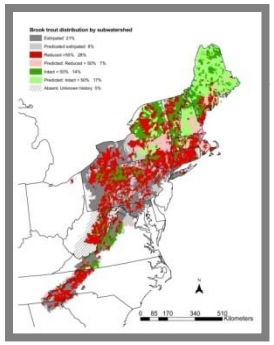
Patch
Metrics

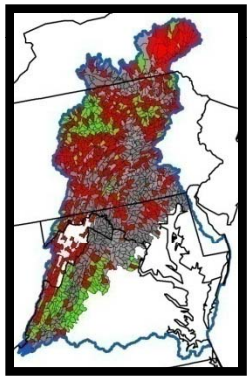
Spatial Patch Metrics (occupancy based)

1. # of patches
2. # of patches with increasing size/connectivity
3. # of patches decreasing in size/connectivity
4. Average patch size of the entire resource
5. # of patches with allopatric or sympatric populations

Assessment Applications

- EBTJV – states
- Chesapeake Bay Executive Order
- NFWF Chesapeake Bay
- Land purchases/exchanges
- Update NGO databases (i.e. Trout Unlimited CSI)





Brook Trout Classifications

- Class 1: Destination fishery (1%)
- Class 2: Local fishery (52%)
- Class 3: Ecological only (40%)
- Class 4: "Winker" (7%)

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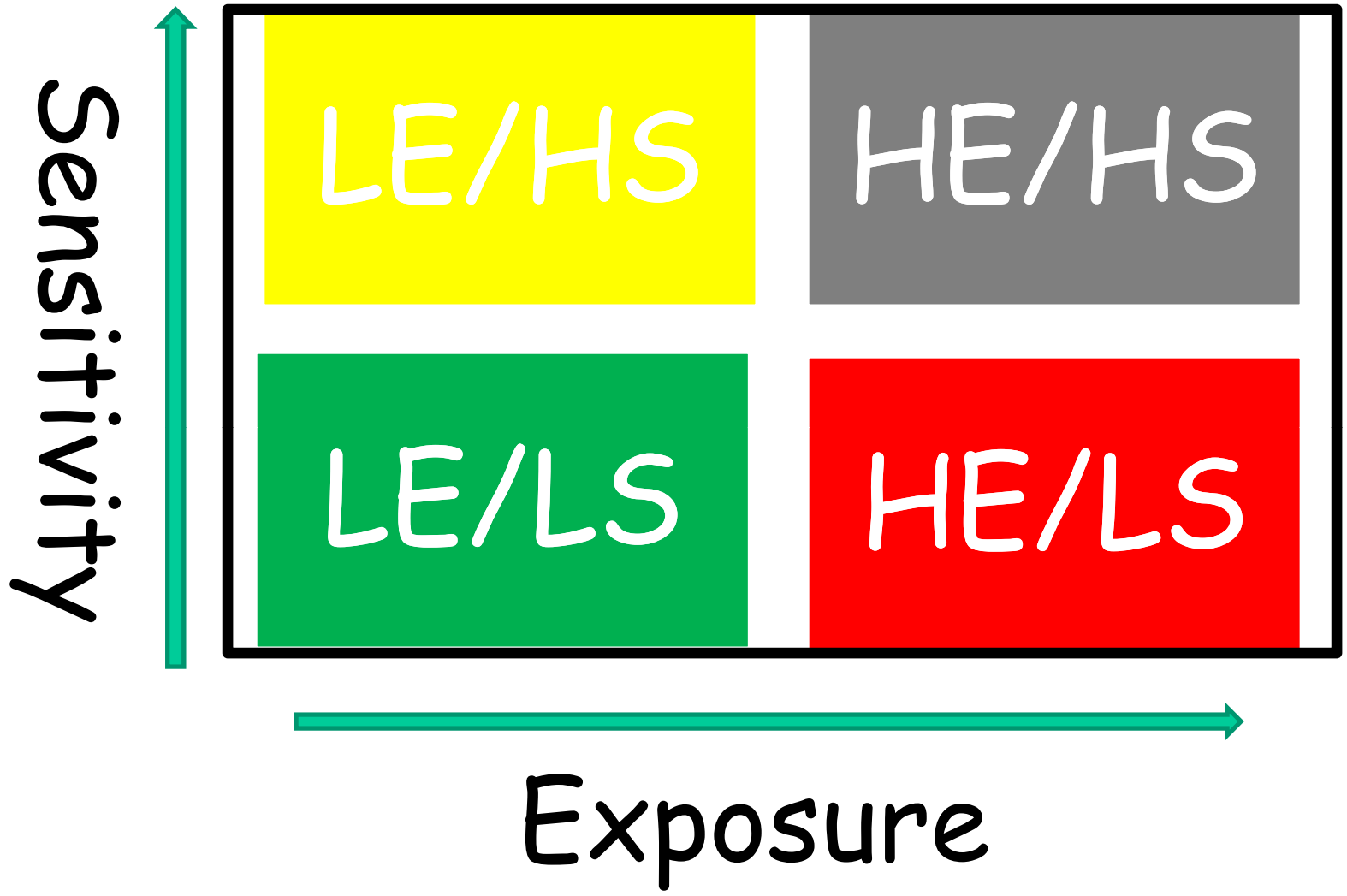
Climate
Change



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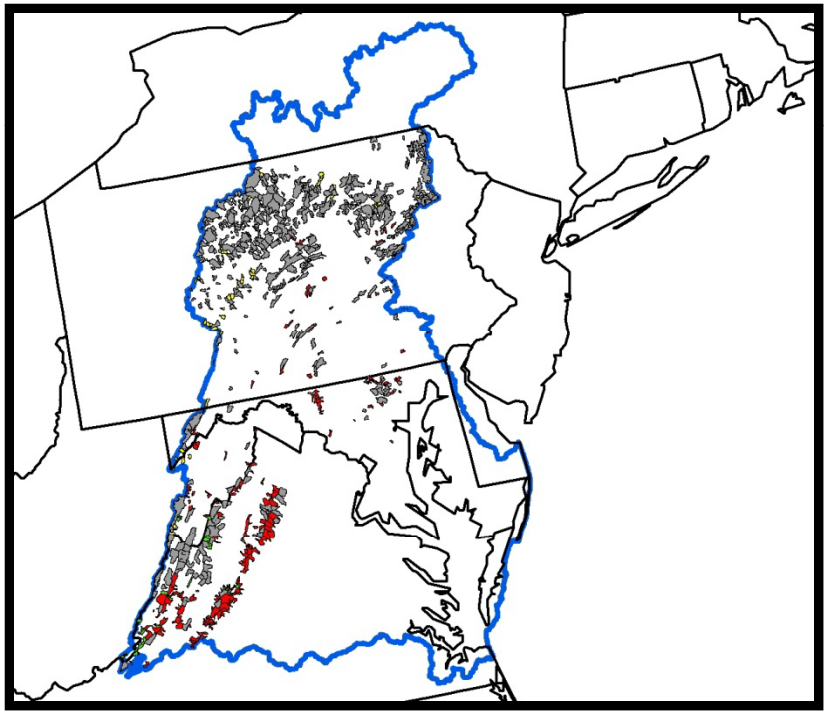
U.S. FISH & WILDLIFE SERVICE

Chesapeake Bay Brook Trout Patches
Climate Change

- HE/HS = 557
- HE/LS = 185
- LE/HS = 91
- LE/LS = 35



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U.S. FISH & WILDLIFE SERVICE


Smith Creek
NFHAP Waters to Watch 2006
National Fish and Wildlife Foundation

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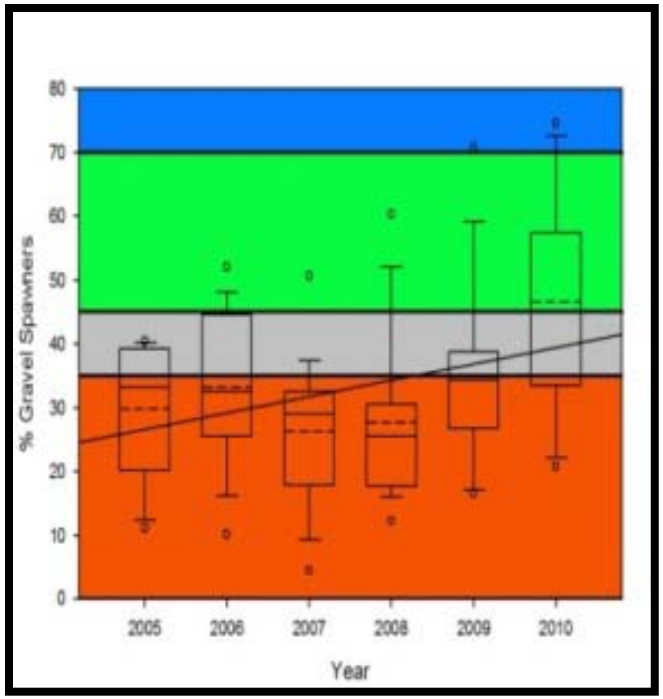
% Gravel Spawning Fishes

- Blue = long term goal
- Green = short term goal
- Gray = end of project goal
- Red = baseline



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National Fish and Wildlife Foundation

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Thanks to the Partners!

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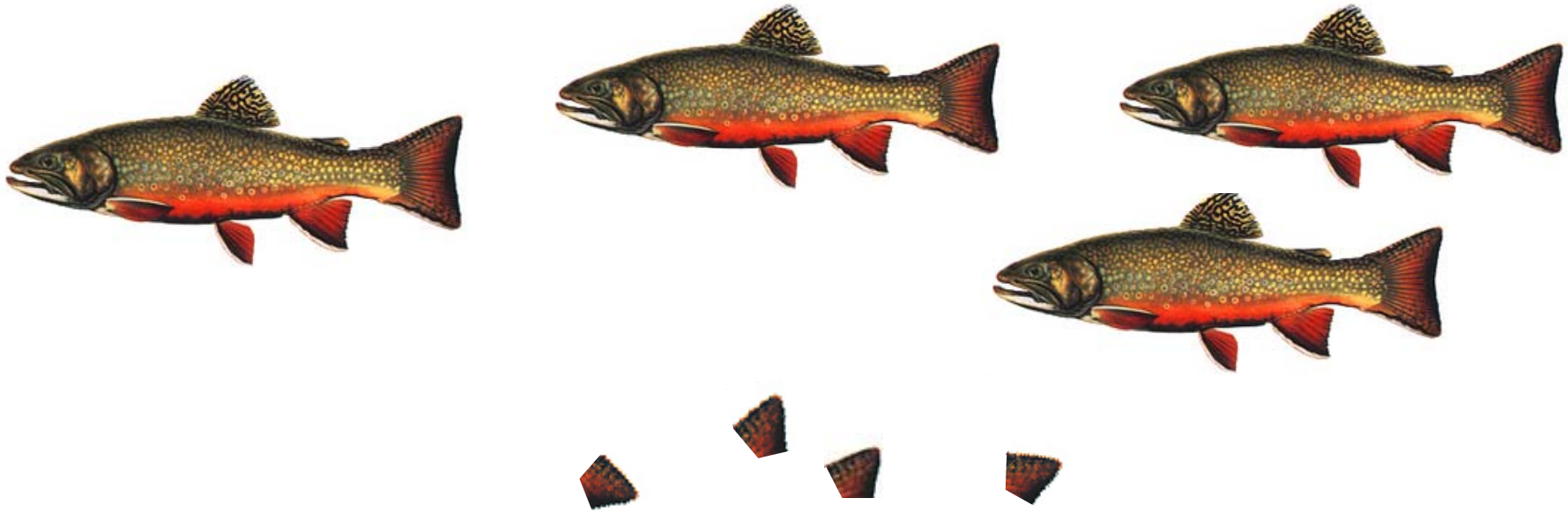
Genetic Patch Metrics



Ne

Nb

diversity

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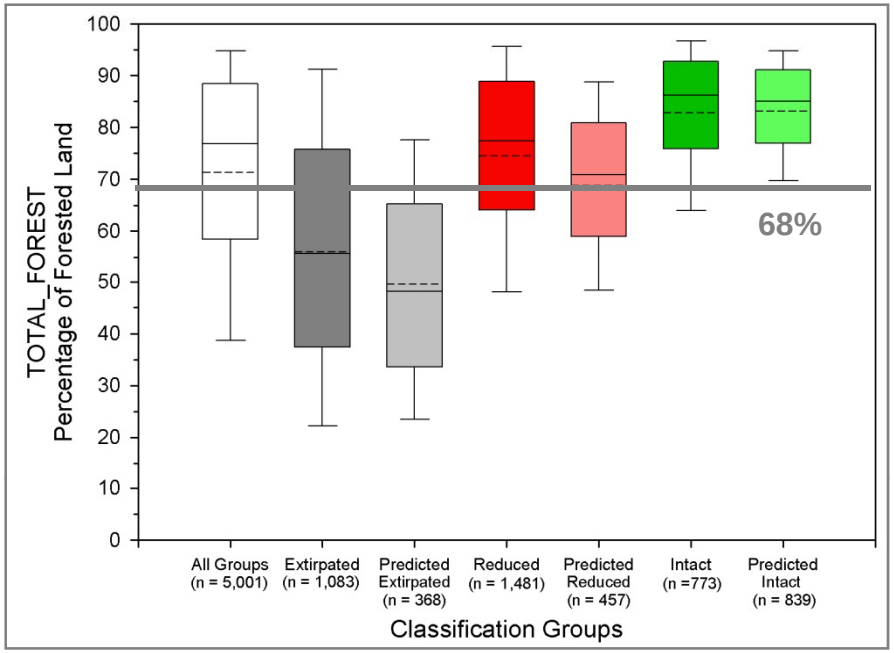
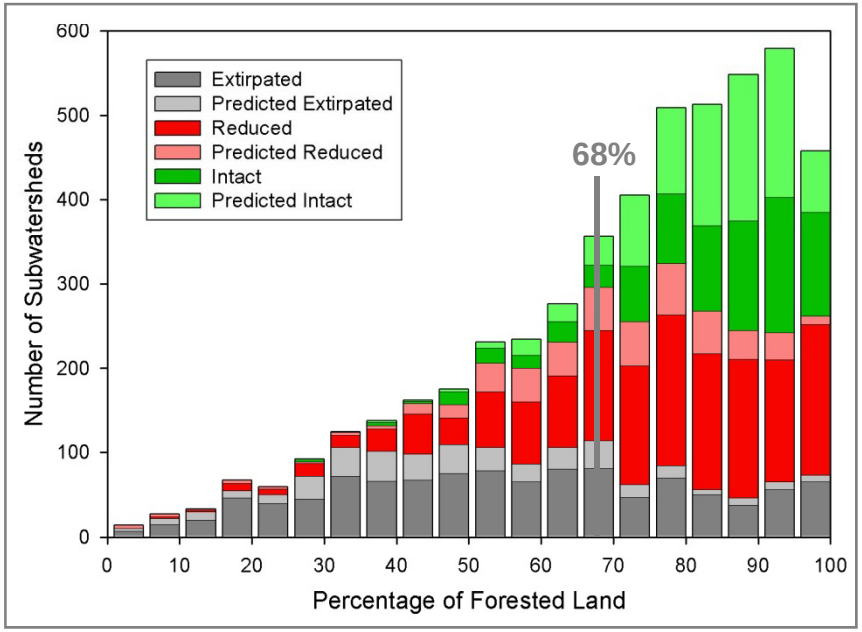
Core Metric: % Forest

- Subwatershed threshold
  - 68% forested land
- Only 6% of Intact subwatersheds have less than 68% Total Forest.
- 85% of Extirpated subwatersheds < 68% Total Forest





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