

# STATE OF THE NORTHEAST

Northeast Regional Rendezvous, June 2019



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## 18 Staff:

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Seth Moessinger (MD)  
Ashley Wenrich, Grant Accountant (PA)  
Plus numerous seasonal field personnel and interns.



## Adaptation Framework

2018 Results in the Northeast

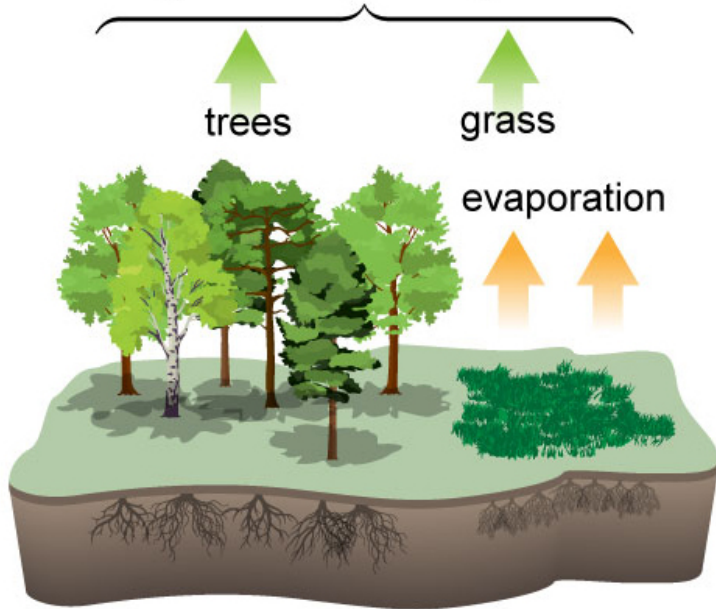




## Climate Change Impacts

# Increased temperature

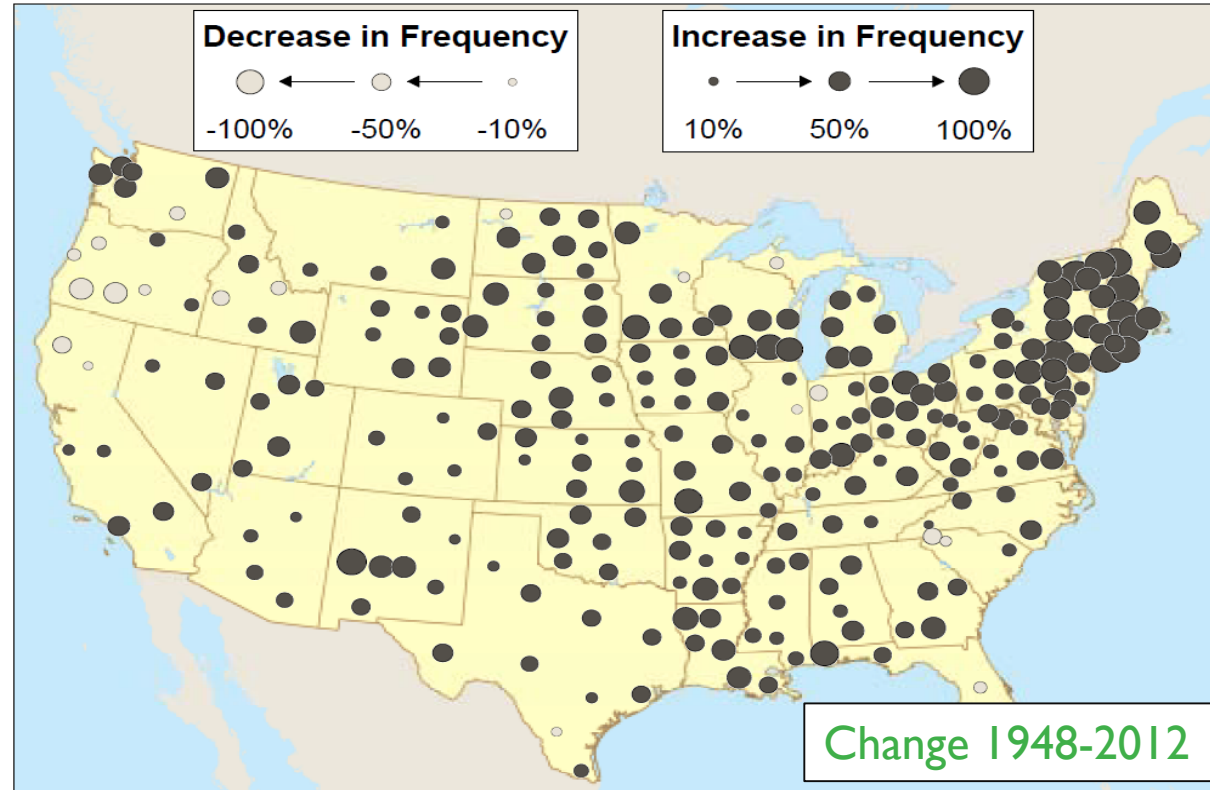
Evapotranspiration =  
transpiration + evaporation



# Increase in extreme precipitation



- Between 1958 and 2007, the Northeast has experienced a 67 percent increase in the amount of precipitation that falls in the heaviest 1 percent of all rainfall events.





After



Before



# Post-Flood Dredging Johns Brook (NY)

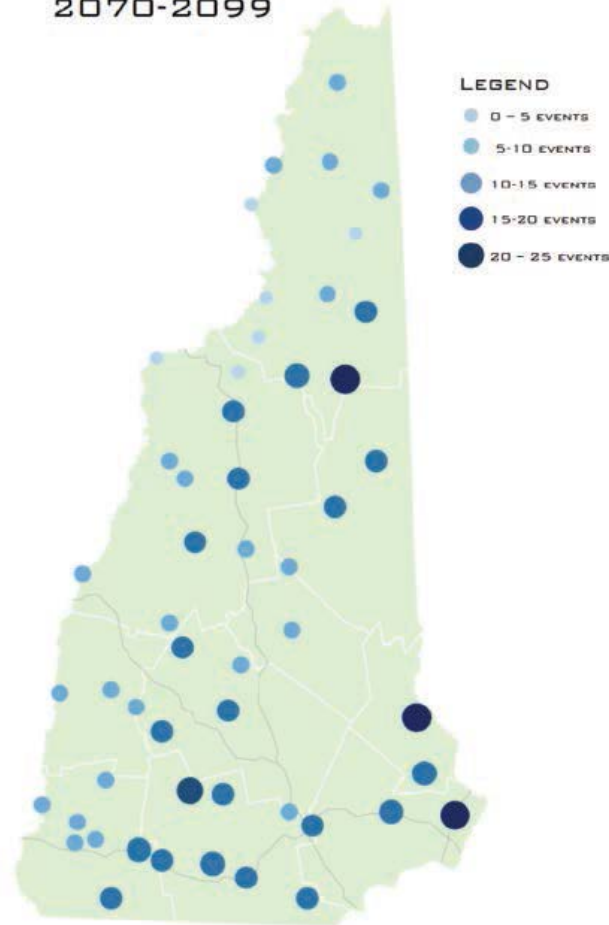


# Increased winter flooding

AVERAGE NUMBER OF PRECIPITATION EVENTS  
EXCEEDING 4 INCHES IN 48 HOURS  
HIGH EMISSIONS SCENARIO {A1fi}  
2070-2099



- Across the northeast, mean annual precipitation is ... projected to increase by the end of the century by about 7–9% or 8–14%, depending on the emissions assumptions.
- Low fall precipitation and high winter precipitation, the latter of which is predicted to increase under climate change for the study region, had the strongest negative effects on trout populations.
- Kanno et al. 2015, Blum et al. 2018







## Cold Stream Forest

Protected 8,200 acres with  
9 brook trout ponds and  
14 miles of thermal refugia in Cold  
Stream.





ANGELINE BROOK  
Westport, MA

JOIN

DONATE

## The future of the Clean Water Rule is in our hands.

The EPA wants to reduce protections for headwater streams.

Stand up for clean water today!

>1,200 comments from TU members in the Northeast; Letters from Chapters and Councils



59 Shares



0



59

# Pennsylvania Unassessed Waters



- Documentation of wild trout populations across PA
- Information used by TU staff and grassroots to advocate for better protection
- Increased protections for 1,661 streams (5,607 stream miles) in 7 years

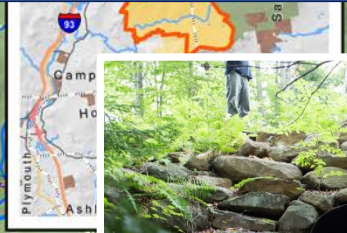
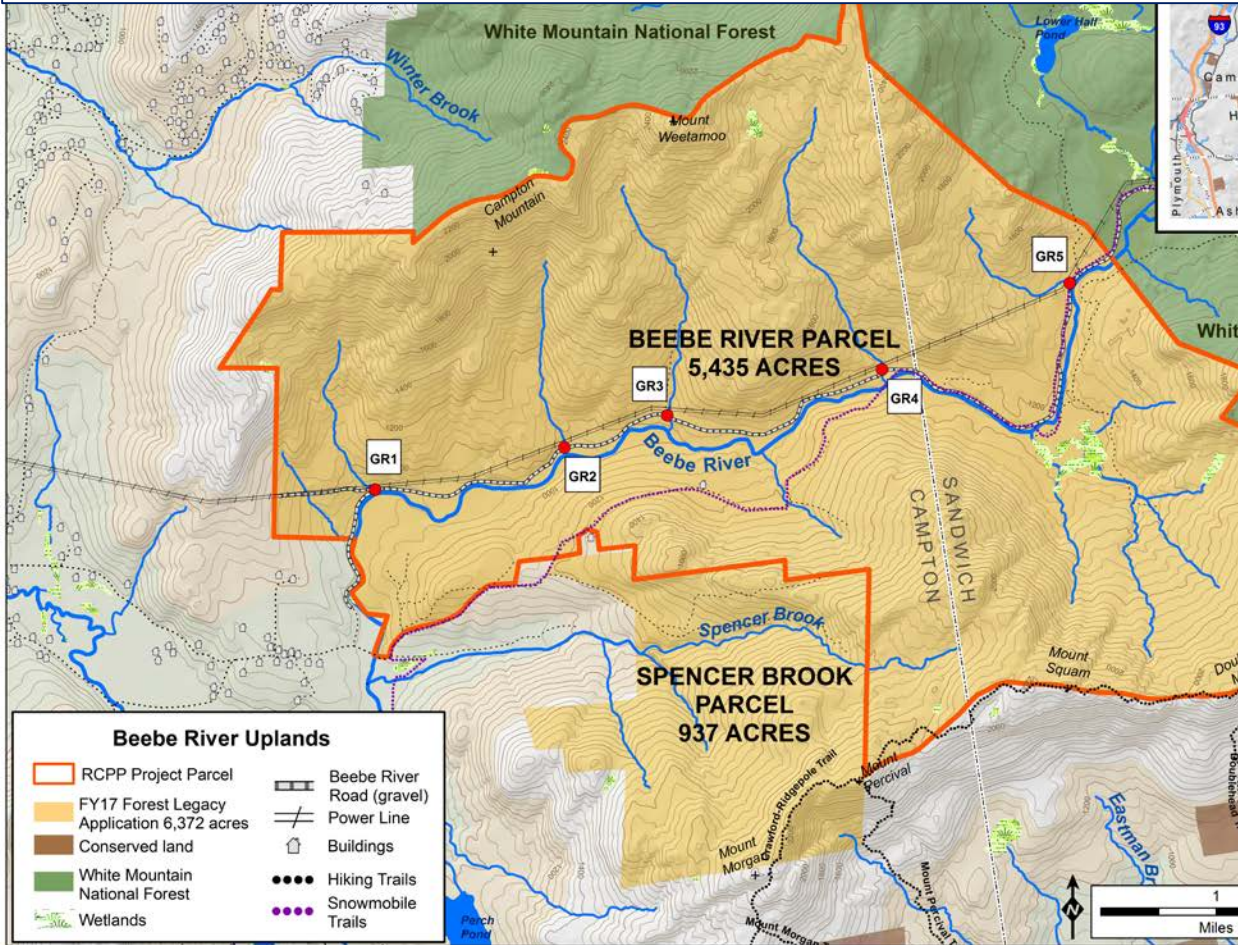




Thermal Impacts:  
Habitat Reconnection  
and Restoration



# Beebe River Habitat Reconnection, New Hampshire



# Frost Gully Brook dam removal, ME

*Max Daily Water Temps in impoundment are  
3 degrees C higher than free-flowing reaches.*





## Smith Creek Shade Study

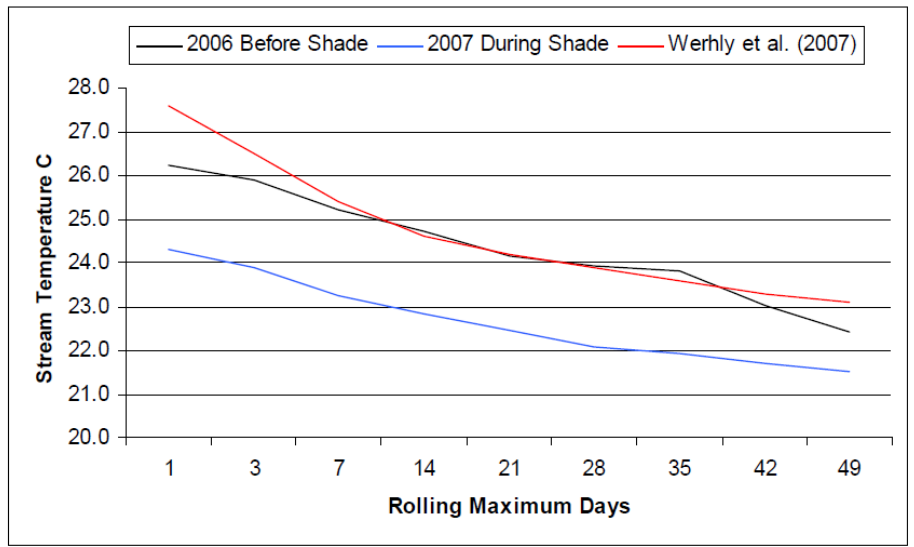


Figure 1.5. Rolling maximum temperatures (°C) at site D from July 26 to September 15 before shade in 2006, during shade in 2007, and thermal tolerances indicated by field observations on presence of trout by Werhly et al. 2007.



## RIPARIAN PLANTINGS



# Stormwater

Tests have shown that pavements that are 100°F can elevate initial rainwater temperature from roughly 70°F to over 95°F.





## Flood Impacts





*large woody debris [in] the stream channel...can trap sediment and add roughness elements to the channel bed that serve to attenuate flow velocities*

- “Enhancing Flood Resiliency of Vermont State Lands,” June 2015



Salmon Creek, CT

# Nulhegan River Watershed



**Pre-Strategic Wood Additions  
Black Branch Nulhegan River, VT**

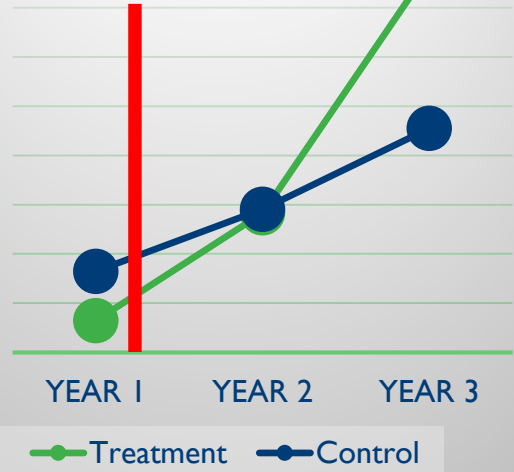


**Post Strategic Wood Additions  
Black Branch Nulhegan River, VT**





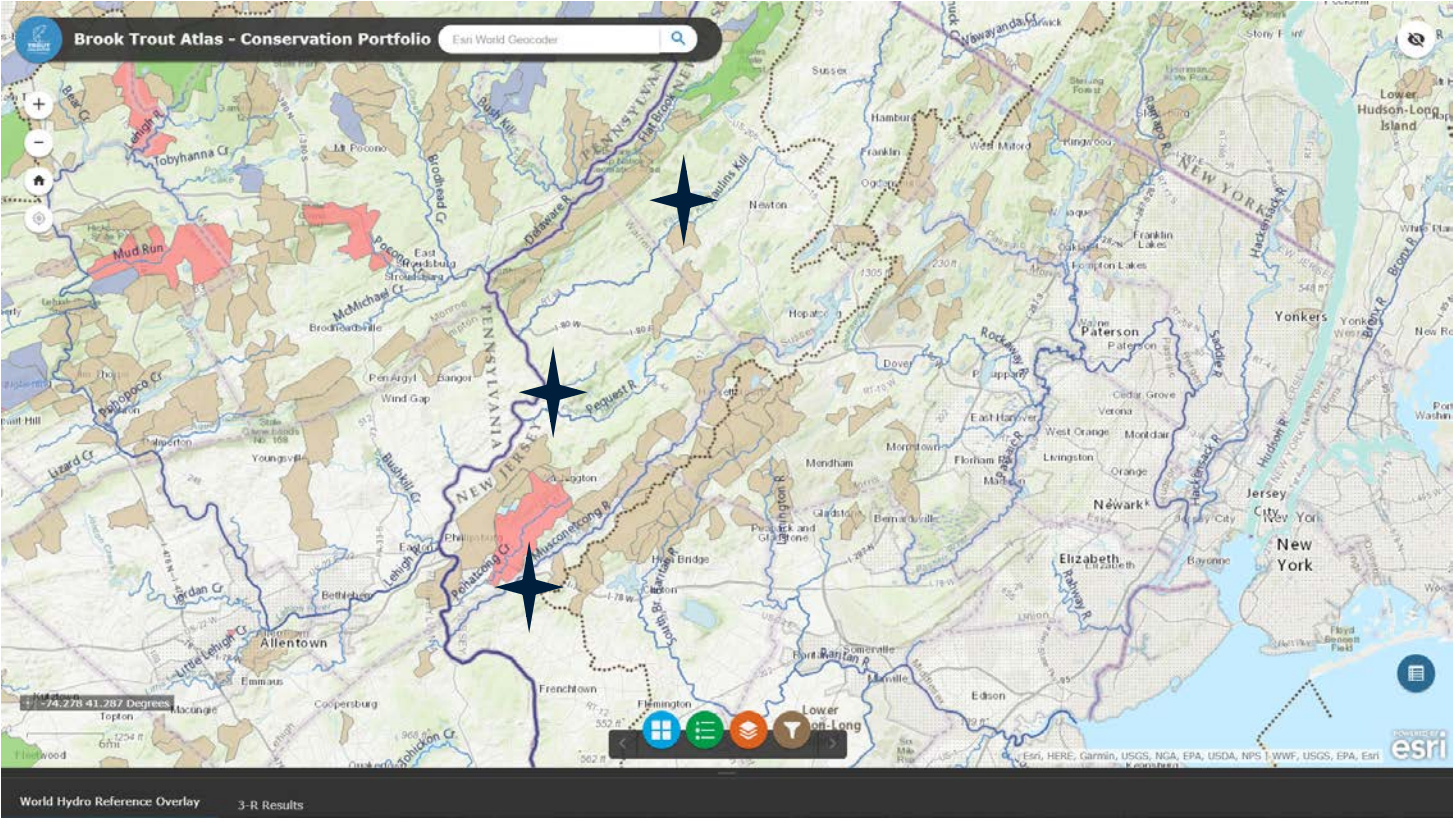
Mean BKT kg/ha (> 6" only)



# Batten Kill River



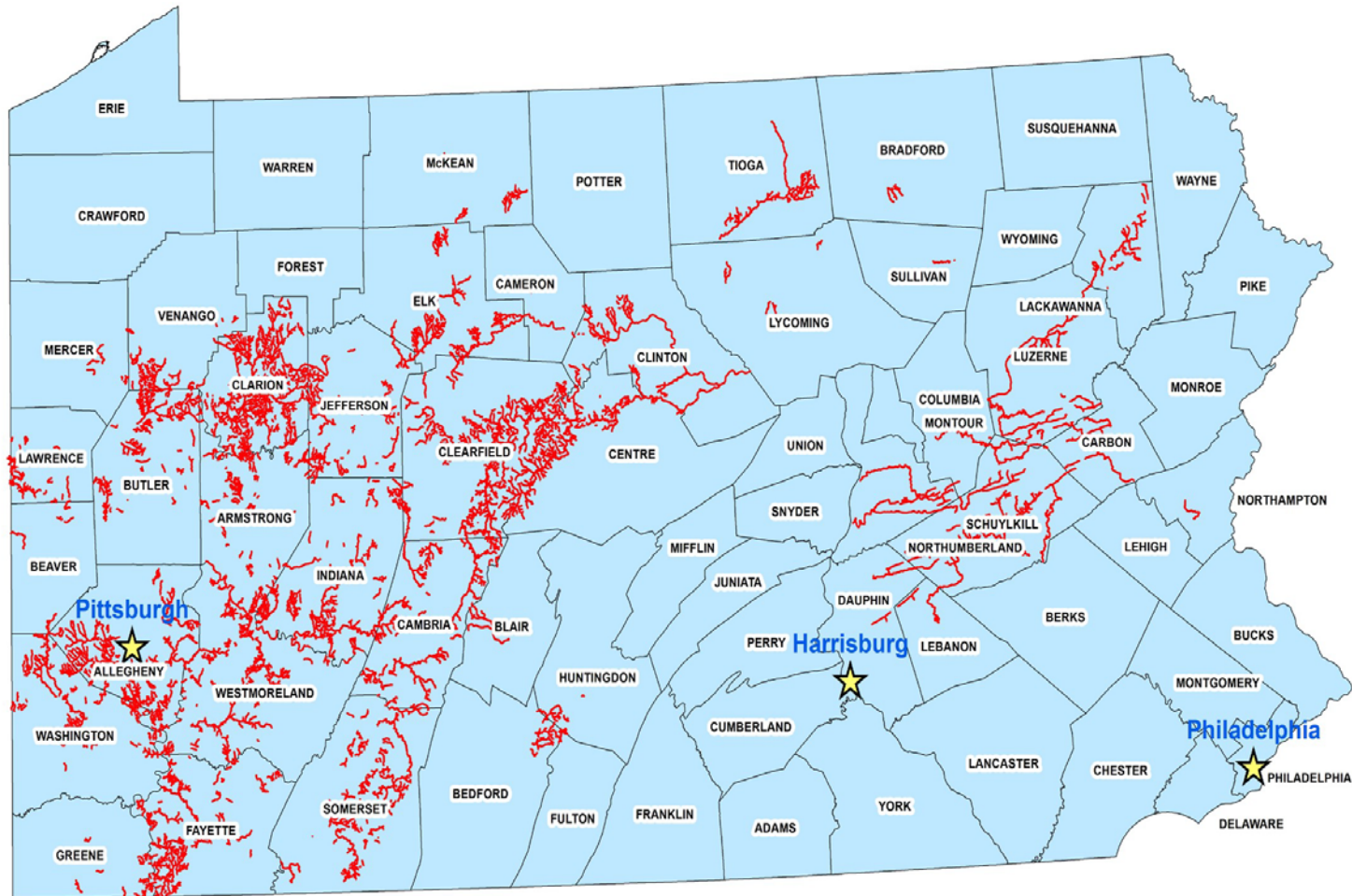
# New Jersey Brook Trout Reintroductions







Pennsylvania Abandoned Mine Cleanup







# Abandoned Mine Treatment Systems





THANK YOU

