

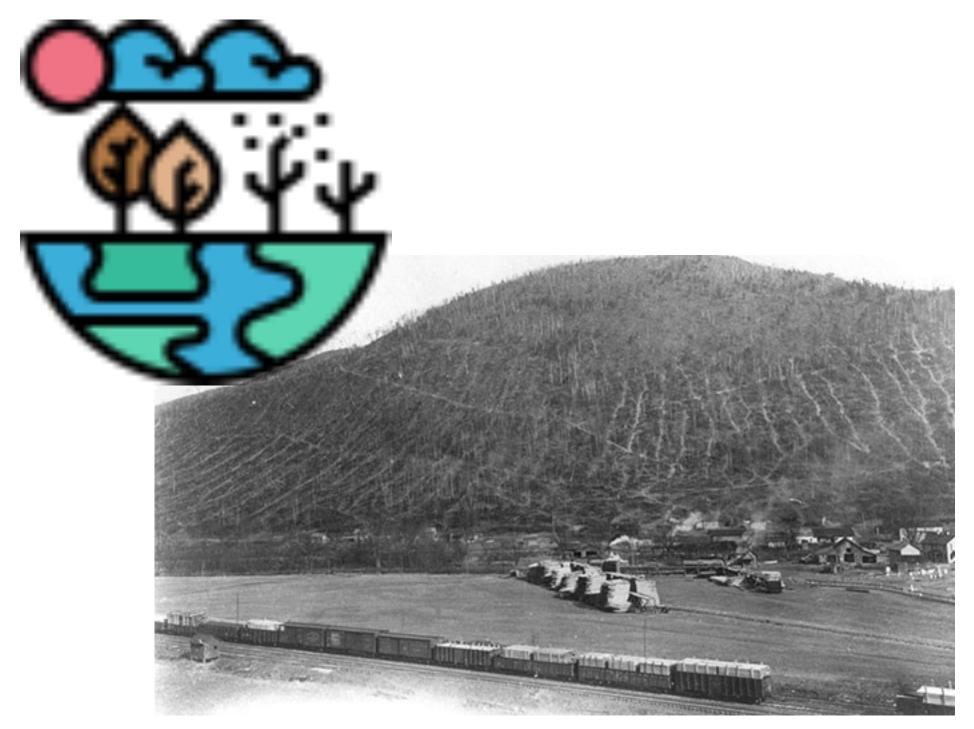


There's a lot going on up here. Adding additional genetics information is something we need to do, not only for information gathering and having better knowledge of the fish that we're managing, but also to help guide us into a future that we know is changing.

MERRY GALLAGHER, NATIVE FISH
CONSERVATION BIOLOGIST, MAINE DFIW



EBTJV's vision: "healthy coldwater systems with fishable brook trout populations throughout their historic eastern geographic range."



What are the biggest threats to brook trout?

...and how can genetics help?

Mount Tom, in Tioga County, after logging, in 1907 Pennsylvania Department of Conservation and Natural Resources

## EBTJV's key conservation actions



(wild brook trout)

- Increase recreational fishing opportunities
- 2 Conserve best of the best

Restore and reconnect suitable habitats

Conserve genetic diversity

- 5 Conserve life history strategies
- 6 Minimize threats



## State management plans







Maryland Department of Natural Resources Fisheries Service Inland Fisheries Management Division

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Vermont Fish and Wildlife Department January 2018

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Virginia Department of Game and Inland Fisheries



NORTH CAROLINA TROUT RESOURCES MANAGEMENT PLAN

COLDWATER FISHERIES MANAGEMENT PLAN NEW JERSEY DIVISION OF FISH AND WILDLIFE

### Management of Wild Trout

New Jersey has a surprising abundance and variety of self-sustaining wild troat populations. Brook trout, the state's only native salmonid, occurs most often, followed by brown trout, rainbow trout, and lake trout. Populations of wild brook, brown and rainbow trout inhabit nearly Jolom lines of streams located in small, upland streams in the northern tier of the state. The state's second largest impoundment supports a reproducing lake trout population. Wild trout are important indicators of high water quality and the ability of waters to support reproducing trout populations is recognized and protected through NDEP regulatory programs. They also represent a renewable resource that can and dose provide angling recreation without the economic cost of stocking. Strategies that guide DPF wild frout management efforis include activities related to inventorying, monitoring, habitat preservation and restoration, and education and communication.

### Importance of Wild Trout

Importance of Wild Trout

Trout that are able to complete their life cycle in a natural aquatic habitat, and maintain a
population through natural reproduction, are termed wild trout. The survival of selfunderstanding applications of wild trout in not dependent upon the stocking of hatchety-reared
trout. Because of their high water quality and habitat requirements, rout are valuable
indicators of healthy aquatic exceptions. The importance of water quality as related to
the ability of a streamer take to support swild (reproducing most propositions) are received to
the complete of the received to the production of the control of the received to
a stream the top of the received to a stream the control of the received to a stream the control of the received to a stream the received to the received available from activities that could potentially impact coldwater quality and habitat, through a variety of NJDEP regulatory programs (see Classification of NJ Trout Waters

Wild trout are a renewable resource that help provide a diversity of desirable trout angling opportunities without the cost of stocking hatchery-reared trout costs. Though generally smaller than their hatchery-reared contemperart, wild trout tend to be more colorful and challenging to eatch. They are valued by anglers who enjoy fishing for naturally reproduced trout found in many small sterame that typically flow into larger, trout-stocked streams. In a survey of New Jersey trout anglers, 20 percent indicated that they fished for wild trout in 2002 (Responsive Management 2003). Streams that are home to wild trout are also highly regarded by recreationists other than anglers (hikers, briders, and the occasional canoesist or kaysheer) who are attracted to these aquatic ecosystems. Not only are there tangible economic benefits resulting from these recreational activities, perhaps more importantly are the intangible benefits to all residents that reflect quality of life values.

Mgmt. of Wild Trout - 53



Pennsylvania Fish and Boat Commission Jason Detar, Kris Kuhn, Dave Nihart, Tyler Neimond, Scott Bollinger, Tom Cox Brian McHail, Charles Murray, and Rob Brown



DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

August 1, 2014 - December 31, 2015

**Among Headwaters Conservation Genetics of Brook** Trout: Occurrence of Meta-Populations and **Landscape Scale Fragmentation** 

Bureau of Natural Resources Inland Fisheries Division 79 Elm Street, Hartford, CT 06106

### NORTH CAROLINA TROUT Management Plan

Continued protection of existing Southern Appalachian Brook Trout populations, and the restoration of those extirpated populations, can only be achieved if managers have a firm understanding of the genetic variance associated with the species.

NORTH CAROLINA WRC

## Getting started

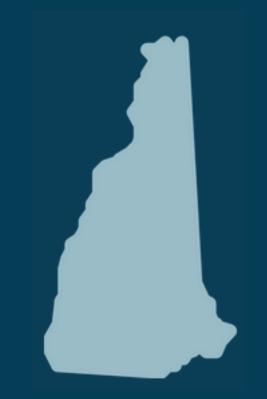


How are the EBTJV states currently using genetics?

What do the brook trout managers want to know?

Understanding genetics is absolutely essential to brook trout management. We don't have enough data to know what is OK and not OK to do, so we take a conservative approach.

John Magee, Fisheries research coordinator, New Hampshire Fish and Game Department





## Common themes

WHERE TO
START

SOURCE POPULATIONS

**UNDERSTANDING INTROGRESSION** 

UNDERSTANDING
THE LANDSCAPE

## WHERE TO START



(Welsh, Tuesday am)

# UNDERSTANDING INTROGRESSION



(Hallerman and Kazyak, Tuesday am)

## SOURCE POPULATIONS



How to best select appropriate source populations for reintroductions

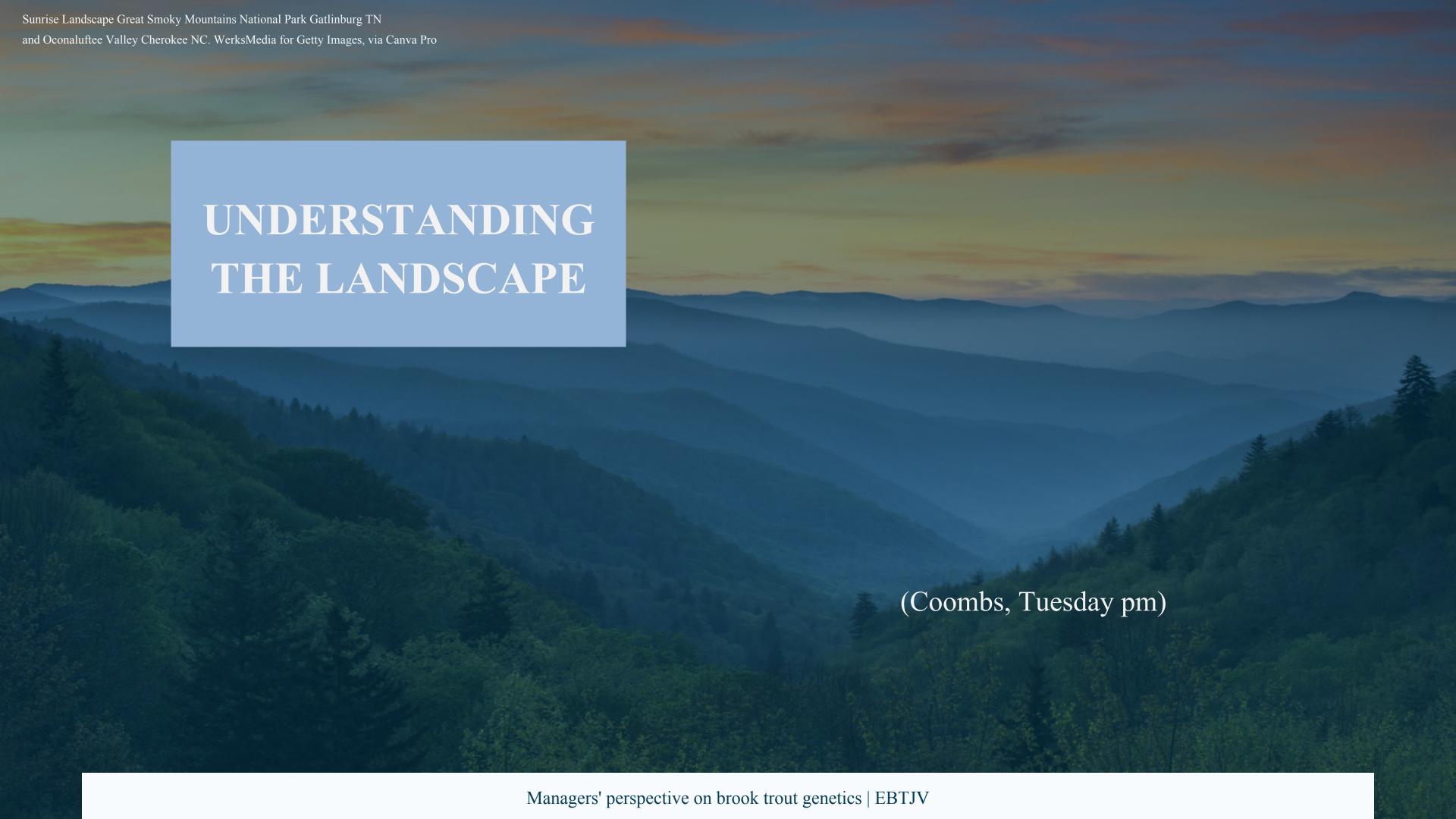
Sourcing for genetic rescue

(Kazyak and Rash, Wednesday am)

(Whiteley, Tuesday pm)

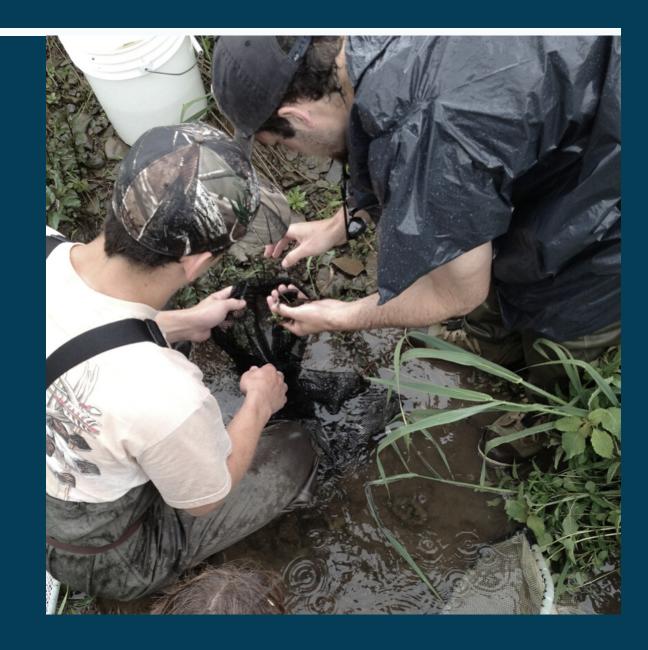
Genetics is a critical piece to brook trout restoration. Without it, it's a dice roll to select the right source population.

JIM HABERA, BIOLOGIST, TENNESSEE WILDLIFE
RESOURCES AGENCY



# Other questions

...many related to using genetics to assess or monitor conservation project outcomes



## Other questions

How do we communicate the use and value of genetics to the general public?

Can genetics help communicate or justify the need to RETAIN barriers?



### Genetics as an ENDPOINT itself

What does the genetic landscape look like?



Conserve genetic diversity of wild brook trout populations

How do various stressors and management practices affect genetic diversity?

### Genetics as an ENDPOINT itself

(i.e. protect the brook trout populations' unique tool boxes\*)

Conserve genetic diversity of wild brook trout populations

Increase recreational fishing opportunities

Genetics to INFORM management and reach conservation endpoints.

(i.e., genetics as a tool we use to help do prioritize, improve, of track effectiveness of all this )

Conserve best of the best

Conserve life history strategies

Restore and reconnect suitable habitats

Minimize threats

# Thank you input from

NAT GILLESPIE

**US Forest Service** 

JOHN MAGEE AND DIANNE TIMMINS

New Hampshire Fish & Game

**JACOB RASH** 

North Carolina WRC

MERRY GALLAGHER AND MATT LUBEJKO

Maine DGIF

**COREY PELLETIER** 

RI Department of Environmental Management

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Tennessee WRA

MATT SELL AND DAN GOETZ

Maryland DNR

LEE SIMARD

Vermont DNR

MATT KULP

National Park Service

SETH COFFMAN, SETH MOESSINGER,

ABBY MCQUEEN AND

**DUSTIN WICHTERMAN** 

**Trout Unlimited** 

MIKE BEAUCHENE AND BRIAN ELTZ

Connecticut DEEP

ADAM KAUTZA

Massachussetts DFW

Jason Detar

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New Jersey DEP

SARAH BAKER

Georgia Wildlife Resources Division

SCOTT CRAIG and CALLIE MCMUNIGAL

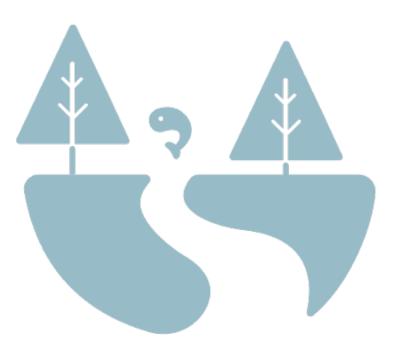
**USFWS** 

STEVE PERRY

**EBTJV** 



## EBTJV's key conservation actions



Increase recreational fishing opportunities for wild brook trout

2

Conserve and/or increase habitats that support robust wild brook trout populations



Restore and reconnect suitable habitats adjacent to robust wild brook trout populations



Conserve genetic diversity of wild brook trout populations



Conserve unique wild brook trout life history strategies (e.g., lacustrine, large river, and coastal populations)



Minimize threats to wild brook trout populations (e.g., degraded water quality, invasive species, altered hydrologic regimes)

