Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC)
Workshop

Understanding Genetics for Successful Conservation and Restoration of Resilient Chesapeake Bay Brook Trout Populations

Fall 2021

Virtual

Workshop Webpage

Tuesday, September 28
Register for the workshop

****Exact Times Are Subject to Change****

This meeting will be recorded for internal use to assure the accuracy of meeting notes.

10:30 am **Introduction**
– Dave *Kazyak (USGS), Eric Hallerman (VT), Lori Maloney (Eastern Brook Trout Joint Venture), Steve Faulkner (USGS)*
- Expertise in the room
- Objectives of the workshop

11:00 am **Major Processes that shape Brook Trout Genetic Structure**
– *Dave Kazyak (USGS) and Eric Hallerman (VT)*
Overview of major processes impacting brook trout genetics. Discussions on the following topics: Glaciation and recolonization, Connectivity, Isolation and drift, Natural selection, and Hatchery introgression.

11:50 am **10-minute break**

12:00 pm **Review of What We Know –***Dave Kazyak (USGS) and Eric Hallerman (VT)*
An examination of Brook trout range-wide patterns and a discussion of how the Chesapeake Bay watershed fits into the broader context. Major considerations to consider within in the Chesapeake watershed are connectivity, small population size, hatchery introgression, local adaptation, and changing landscapes and climate.

12:45 pm **Group Discussion**

1:15 pm **Break**

2:15 pm **Tools for Studying Genetics –** *Amy Welsh (WVU)*
With a focus on how information has changed over time, Welsh will provide a short background on various techniques and major metrics for studying genetics.

3:00 pm **Group Discussion**

3:15 pm **Using Genetics to Identify Robust and At-Risk Populations –** *Jason Coombs (FWS)*
Discussion of identifying and conserving strongholds versus small, isolated populations.
- *Identifying and conserving strongholds*: 'what constitutes a stronghold?', Key considerations, Protection strategies

- *Managing small, isolated populations*: Isolation and drift, Relationship between genetics and demographics, Key considerations, Management strategies
    - Can we convert small isolated populations to strongholds? How to prioritize these versus stronger populations? Resources are limited: should we devote resources to these?
- Include demonstration of Brook Trout Explorer

3:45 pm **Genetic Rescue –** *Andrew Whiteley (University of Montana)*
Whiteley will provide an overview of genetic rescue, associated risks and rewards, and a review of the current State of the Science.

4:15 pm **Group Discussion**

4:45 pm **Synthesize and Overview of Day 1**

5:00 pm **Recess**

Wednesday, September 29
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9:00 am **Synthesize and Overview of Day 1**

9:15 am **Role of Genetics in Supporting Reintroductions**
– *Dave Kazyak (USGS), Jake Rash (North Carolina Wildlife Resources Commission) and Shannon White (PSU)*

- Selection of source stocks
- Strategies (pros and cons)
- Evaluation of success
- Case studies (LeConte, Purlear, others)
- Need for further evaluation

10:00 am **10-minute break**

10:10 am **Group Discussion**

10:40 am **Environmental DNA: Utility and Application –** *Meredith Bartron (FWS)*

- Overview of approaches and applications
- Limitations
- Key considerations for successful implementation

11:20 pm **Group Discussion**

12:20 pm **Break**

1:20 pm **Communicating to the Public and Decision Makers**
– Dave Kazyak (USGS) and Jake Rash (North Carolina Wildlife Resources Commission)
Examples of communication efforts

1:30 pm **Panel discussion**
– *Jake Rash (North Carolina Wildlife Resources Commission), Matt Kulp (Great Smoky Mountains National Park), Shannon White (PSU), and Shawn Rummel (Trout Unlimited)*

- How to translate genetics to the general public?
- What resonates?

2:10 **Where are we and where are we going?: 10-minute 'lightning talks'**

- Introduction/format – *Dave Kazyak (USGS)*
- Local adaptation – *Eric Hallerman (Virginia Tech)*
- Adaptation to warming temperature – *Mariah Meek (Michigan State University)*
- YY Brown or Rainbow Trout for suppression of non-native trout – *Andrew Whiteley (University of Montana)*

3:10 pm **Workshop Adjourns**

3:10 pm **Steering Committee Meets**

Steering Committee will discuss recommendations from the participants and timeline for workshop report writing.