Maryland Brook Trout Reintroduction and Propagation: An Update

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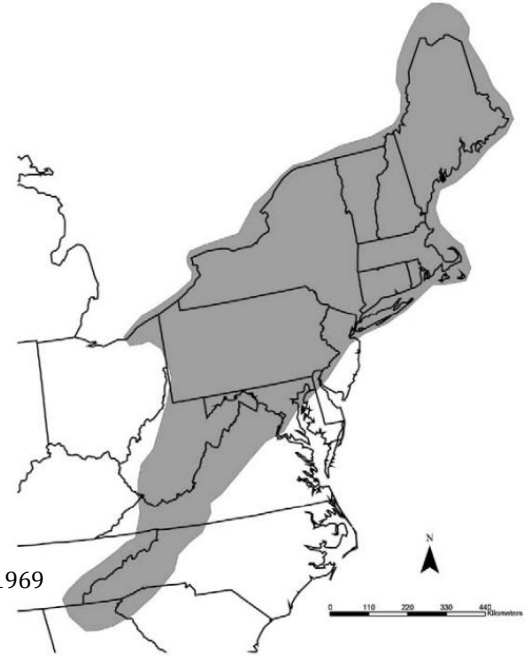
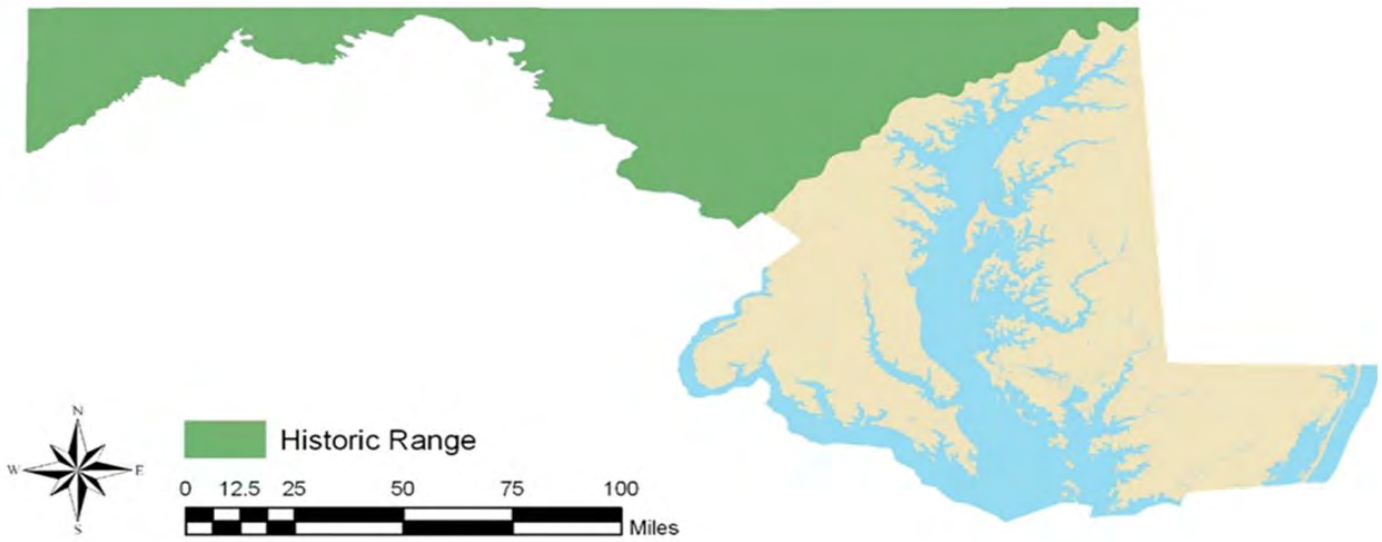
Brook Trout Range

- Historical range largely influenced by the last ice age approximately 70,000 years ago
- Range extends from Canada to Georgia
- Historically present in all geographic provinces in Maryland (Appalachian Plateau, Ridge and Valley, Blue Ridge, Piedmont, and Coastal Plain)

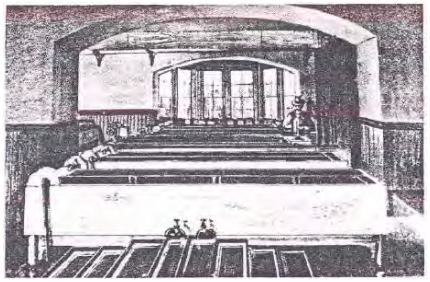


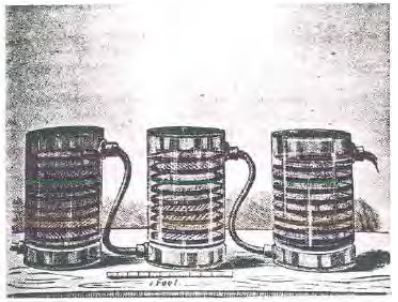
MacCrimmon and Campbell 1969



Brook Trout Management History

- Brook trout fishery almost exclusively recreational
- First records in Maryland from early 1800s – Meshach Browning writes of catching brook trout up to 20” long in Youghiogheny River drainage
- 1874 - Maryland legislature establishes a Commissioner of Fisheries **due to observations of declining fish stocks**
- 1876 - first brook trout fishing regulation instituted to establish an open season
- Late 1800s - declines in brook trout populations observed. Hatchery and stocking program established. Eggs sourced from Maine and Rhode Island



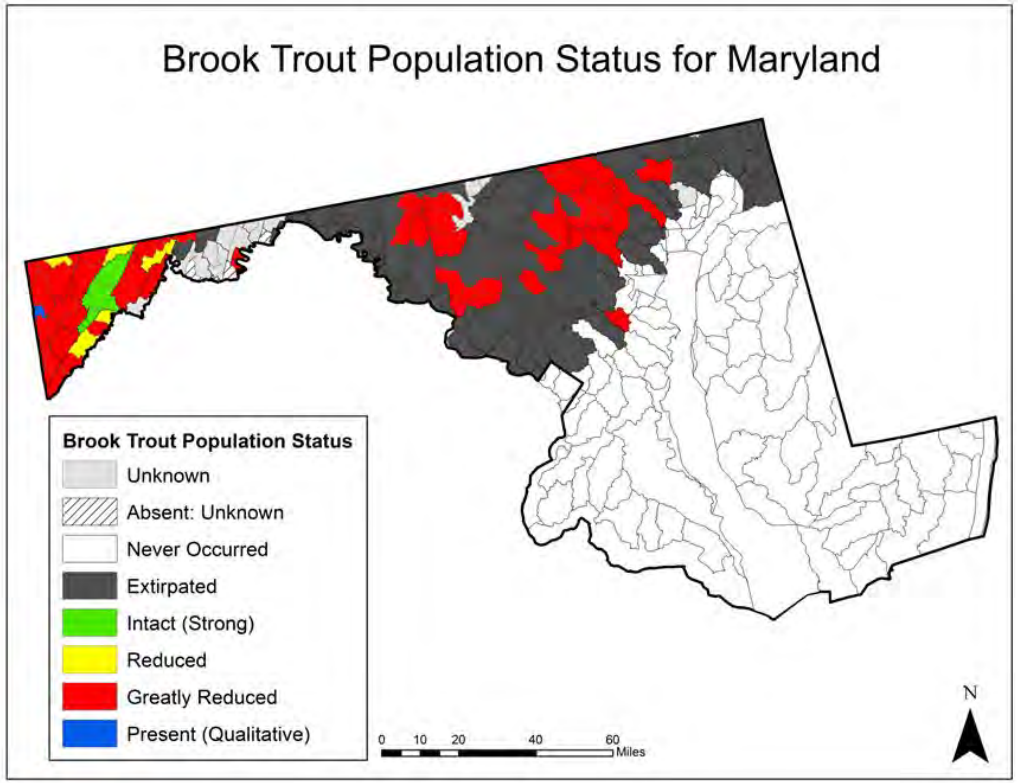


Brook Trout Management History

- Early 1980s - Brook trout stocking program discontinued
- 1970s and 1980s - Documented efforts to establish new brook trout populations by translocated fish from stable populations to receiving streams
- Receiving streams likely supported brook trout historically by populations were extirpated due to water quality degradation
- Populations established during this time that continue to persist
  - Little Antietam Creek (Washington County)
  - Warner Hollow Run (Washington County)
  - Bear Branch (Frederick County)
  - Bush Cabin Run (Baltimore County)
- Populations established during this time that are likely extirpated
  - Jabez Branch (Anne Arundel County; recent extirpation)
  - Murley Branch (Allegany County)
- 1986 - Coldwater Fisheries Policy implemented with priorities for protecting and enhancing wild trout populations

Background

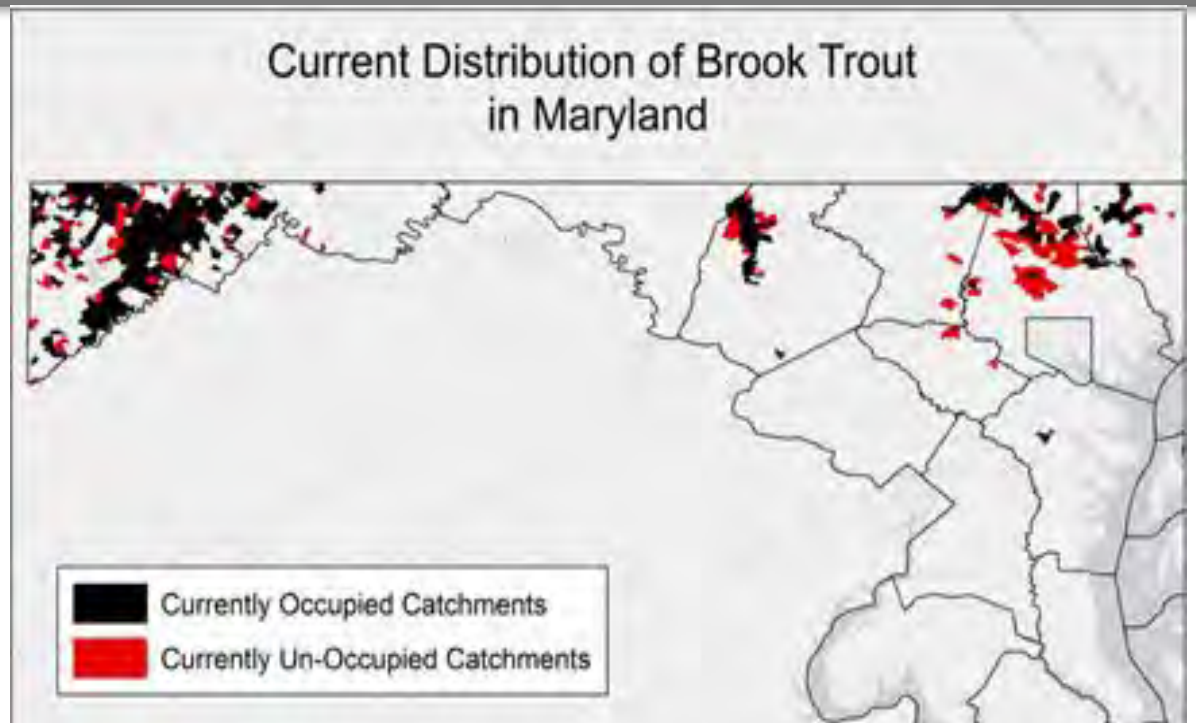
- Brook trout declines observed throughout range in 1990s and early 2000s
- Hudy et al. (2005) estimated >60 percent reduction in occupancy throughout Maryland
- Established need for conservation in Maryland and throughout range
- Chesapeake Bay Watershed Agreement (2015): “Restore and sustain naturally reproducing brook trout populations in Chesapeake headwater streams with an eight percent increase in occupied habitat by 2025.”
- Maryland needed a baseline to determine status



Hudy et al. 2005

Brook Trout Population Inventory

- Survey of all Maryland brook trout populations conducted from 2014 - 2018:
  - ~27 percent decline in occupancy statewide
  - ~50 percent decline in the Piedmont
- Updated conservation strategy in 2021:
  - Resiliency
  - Protection
  - **<u>Reintroduction</u>**



Brook Trout Reintroduction

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- Three reintroduction attempts started in 2024 in Washington County
- Brook trout reintroduced by translocation
  - Source population selected based on brook trout density and genetic health
  - Source and receiving streams: similarity of habitat and close geographic proximity
  - Approximately 100 individuals translocated in initial effort
  - Transferred using coolers - low density maintained and travel distance minimized

Brook Trout Reintroduction

- Translocations completed in September prior to spawn
- Follow-up surveys conducted in summer 2025
  - Single pass electrofishing
  - Observation of translocated adults
  - **Documentation of young-of-year of particular interest**

Brook Trout Reintroduction

- 2025 survey results suggested progress
  - Greater than 10% recovery of translocated adults at all three reintroduction sites
  - Young–of-year observed at all three reintroduction sites. Translocated individuals successfully spawned
  - Source streams were surveyed as well: no clear signals of declines related to translocations




Brook Trout Reintroduction

- Translocations continued in September 2025 for all three streams
  - Equipment improvements:

Brook Trout Reintroduction

- 2025 translocations moved only 50 individuals to reintroduction streams
- Avoided young-of-year - will look for juvenile fish in 2026
- Surveys will be conducted in 2026:
  - Continued presence of translocated adults
  - Young-of-year
  - Age 1 fish

Brook Trout Propagation

- Translocation is only an option when a source population is available
- Source populations are limited, particularly for Central Maryland
- Bear Creek Isolation Hatchery constructed for wild trout propagation
  - Recirculating System
  - Uses well water
  - Minimal effluent

Brook Trout Propagation

- Method:
  - Capture female and male brook trout (~1:3 ratio) prior to spawn.
  - Strip eggs and milt
  - Captured adults returned to stream unharmed
  - Field fertilize eggs and transfer to an isolation hatchery facility
  - Culture from egg to fingerling (October to ~April)
  - Release fingerlings to targeted stream

Brook Trout Propagation

- 186 eggs collected and field fertilized in November 2025
- Only three eggs reached eyed stage and one egg hatched
- Eggs were collected about 1 to 2 weeks too late
- Peak spawning activity is influenced by multiple factors, including day length, water temperature, etc
- Scouting for redd construction and other spawning behaviors will be initiated earlier in 2026

Propagation: Next Steps

- 2025 was a learning experience. Field methods will be refined and revisited in 2026
- A successful method will lead to use in areas of the state where source populations are limited
- Possible applications for genetic rescue in the long-term: use propagation to improve genetic diversity of isolated populations
- Propagation and reintroduction may help us reach occupancy goals
- Funding sources:
  - Sport Fish Restoration
  - NFWF Chesapeake WILD: $239,000 grant through 2027

Questions?

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