



Interdisciplinary Consortium
for Applied Research in the
Environment

National Science Foundation
Research Training Grant

*Broadening Participation Across the
Environmental Sciences in & around
Baltimore Harbor*



Project Title: Using environmental DNA (eDNA) to track Brook Trout recovery in tributaries of the Chesapeake Bay

UMBC mentor name(s) & department: Dr. Tamra Mendelson, Biological Sciences

Partner mentor name(s) & institution: Dr. Cheryl Morrison and Dr. Stephen Faulkner, Eastern Ecological Science Center, U.S. Geological Survey

Brief project description:

Brook Trout are native to freshwater streams of the eastern U.S., and their presence indicates the health of streams that flow into Baltimore Harbor and the Chesapeake Bay. The Chesapeake Bay Program (CBP) Watershed Agreement aims to increase Brook Trout populations by 8% by 2025. However, tracking progress toward that goal with traditional sampling methods is labor intensive and costly. This project will use environmental DNA (eDNA)—a powerful bioinformatic tool for detecting the presence of aquatic organisms—as a more cost-effective way of tracking Brook Trout occupancy across a large geographic range. Combining field and laboratory work, the ICARE trainee and mentors will sample water from various stream sites to detect the presence of Brook Trout and perform a series of laboratory experiments to improve current PCR assays.



Picture of a brook trout taken in August 2014 from survey to evaluate potential effect of shale gas development in Tioga County, Pennsylvania. Image by Jeffrey Cole, USGS.