

RESOURCE MANAGEMENT AND SCIENCE DIVISION

FISHERIES MANAGEMENT

BROOK TROUT RESTORATION AND REINTRODUCTION:

Lynn Camp Prong: Fisheries staff initiated the collection of the data necessary for planning a brook trout restoration project in 2008. These data include rainbow and brook trout distribution, fish population sampling, stream gradients, stream discharge, and dye flow times. A cooperative agreement with Tennessee Technological University has been implemented to initiate aquatic insect monitoring prior to treatment

Bear Creek: The restored section of Bear Creek was surveyed in June 2007 to evaluate population status and brook trout reproductive success. Population monitoring revealed that the brook trout population was approaching pre-treatment population levels in the upper 4.0 km of the treatment area. However, population levels in the downstream most 1 km of stream dropped to almost zero. Additional monitoring will be conducted in 2008 to determine if additional brook trout need to be transplanted into this segment of stream.

Sams Creek: Population monitoring in 2007 indicated that the brook trout population in the restored section of Sams Creek was approaching carrying capacity. Based on these data fishery staff has recommended that the stream be opened to fishing in 2008.

THREATENED AND ENDANGERED FISH POPULATION MONITORING:

Two graduate students working through Tennessee Tech University conducted distribution surveys of four federally threatened and endangered fishes in the lower 12 miles of Abrams Creek. Three of the four species were documented and all showed evidence of natural reproduction. The students mapped habitat throughout the study section in order to determine the amount of habitat available for each species and identify potential future reintroduction sites into unoccupied suitable habitat. During 2008, the students will evaluate and quantify visitor impacts to these species in the Abrams Creek campground area and provide educational data and protection recommendations to our resource education and protection staff. The students will also provide standardized monitoring protocols which the park will be able to use to monitor these populations in the future.

WATER QUALITY MONITORING: Water samples were collected every other month from 46 representative sites across the Park by staff from the University of Tennessee (UT) and volunteers from Trout Unlimited. Trout Unlimited volunteers collected samples from 34 of the sites. All samples were analyzed by staff from the Department of Civil and Environmental Engineering at UT and the data is incorporated into the Park's long-term water quality database. The data indicate that nitrate and sulfate deposition was close to the average deposition for the last 15 years. Park wide data show a slight decline in mean pH (0.007) from 2006 to 2007. This decline can be linked to an increase in the number of high elevation sights with a pH less than 6.0. These data also show that 81.4% of the sites sampled have a pH greater than 6.0, a value that is not likely to be harmful to aquatic organisms. Trace metal analyses were also performed on each sample collected. These data indicate that 24 of the 230 samples analyzed had aluminum values (100 – 200 ppb) in

the range known to be harmful to trout. This information is supported by results from another study which demonstrated that adult brook trout lost significant amounts of whole body sodium during storm events where stream pH declined below 4.5 and aluminum levels increased. Long term monitoring of base flow stream water quality shows a trend of slowly declining pH at elevations below 3,500 ft such that if current trends continue, all GRSM waters in this elevation range will be below pH 6.0 within 14 to 51 years and eventually below 5.0 depending on the elevation.

TECHNICAL ASSISTANCE: The Park's fishery crew assisted staff from TWRA with sampling in four large streams in September and October. They also assisted biologist from North Carolina Wildlife Resources Commission with large stream sampling in July 2007.

IMPAIRED WATERS: In 2006, the state of Tennessee listed approximately 41 miles of stream in GRSM as impaired waters under Clean Water Act Section 303d due to low pH. Park staff has been working with staff from EPA and the Tennessee Department of Environment and Conservation (TDEC) to develop Total Daily Maximum Limits for these streams. Discussions indicate that TDEC will lead this effort with assistance from Park and EPA staff.

PROFESSIONAL COMMITTEES: Steve Moore is the National Park Service representative on the Steering Committee for the Eastern Brook Trout Joint Venture Initiative. The purpose of this group is to identify threats to the existence of brook trout and to develop strategies to mitigate these threats and stabilize and expand the existing range.

Steve Moore is the symposium Chair for Wild Trout IX. This international symposium will be held in West Yellowstone in September 2007.

PROGRAMS AND PRESENTATIONS: Steve More and Matt Kulp gave three presentations each to Trout Unlimited chapters in two states. They also gave two presentations to university groups.

In January, Steve and Matt manned a booth at the Knoxville Fishing Show. The booth displayed highlights of the Park's fishery program and they had numerous handouts on Park programs. The three day event was well attended and many interested people stopped at the booth to ask questions.

The Little River Chapter of Trout Unlimited held the fourth Trout Fest in Townsend in June 2007. The Park's fishery crew set up an educational booth at the event and provided information on fishing opportunities, brook trout restoration, and long-term trends in fish populations as well as general Park information to numerous visitors.