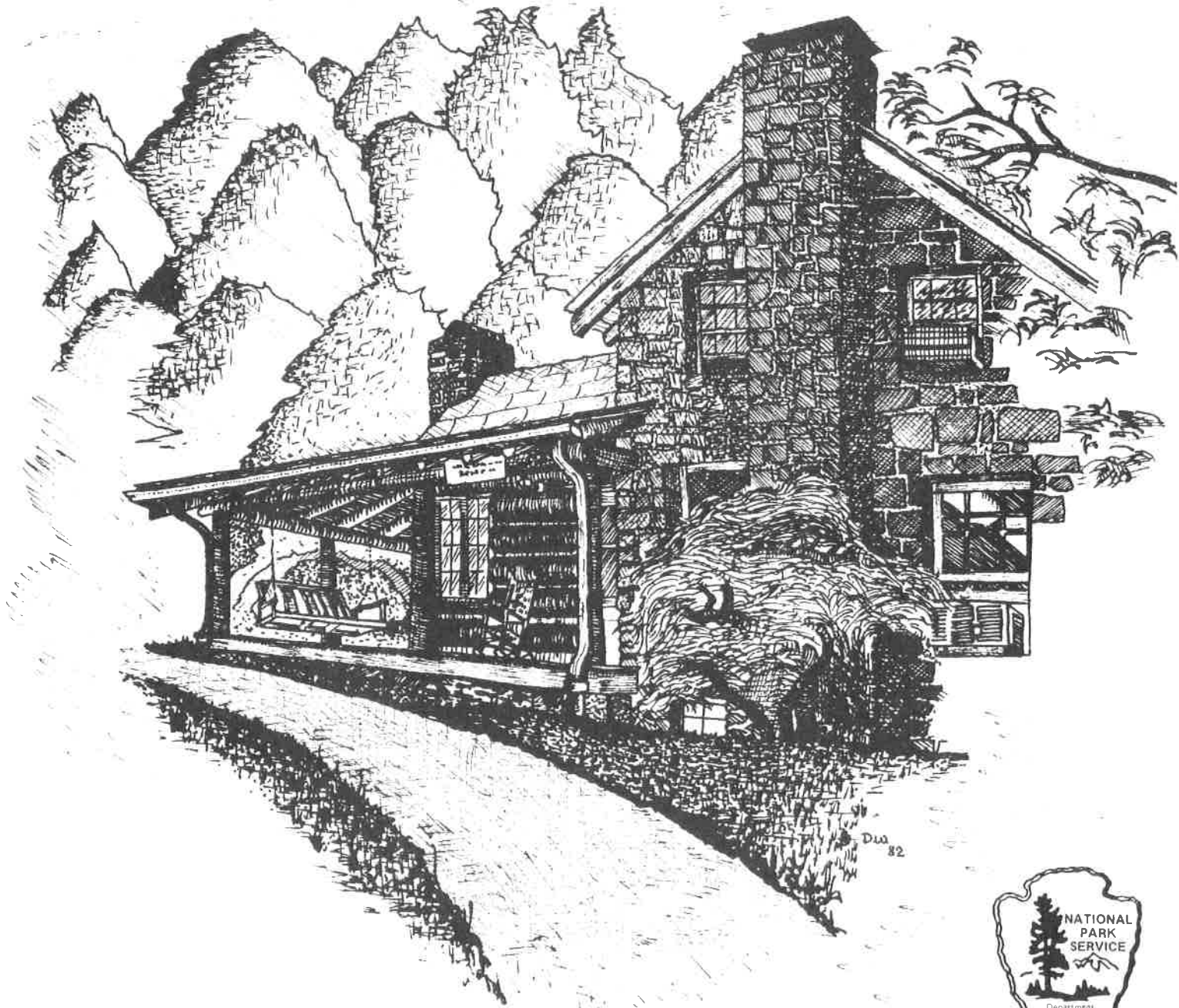


eighth annual Scientific Research Meeting

NATIONAL PARK SERVICE - SOUTHEAST REGION



JUNE 24-25, 1982

**GREAT SMOKY MOUNTAINS NATIONAL PARK
GATLINBURG, TENNESSEE**

WATER QUALITY CHANGES DURING FISHKILLS IN AN ACID-SENSITIVE WATERSHED,
CHEROKEE, NORTH CAROLINA

- - LISA M. BEARD and HARVEY OLEM, Tennessee Valley Authority,
Norris, Tennessee

The possible causes of fishkills in trout-rearing operations in the Raven Fork Watershed were investigated. The nature of water quality changes during storm events and the possible factors affecting water quality were evaluated in an attempt to better understand the relationship between the fishkills and environmental factors.

Automatic streamwater samplers and continuous instream monitors provided information on chemical characteristics during both baseflow and storm-flow conditions. Measurements of pH, temperature, dissolved oxygen, conductivity, acidity, alkalinity, major cations and anions, and selected metals, including aluminum species, were obtained from streamwater just upstream from the trout-rearing operations and at selected locations in the headwater streams. During storm events instream pH was found to decrease as much as two units (from pH 6 to pH 4) and metals, particularly aluminum, were found to increase (from < 0.1 mg/L to almost 3 mg/L).

Based on these preliminary studies, certain factors which may be contributing to the fish mortalities are being investigated more closely, such as the contribution to stream acidity by naturally occurring organic acids and by acidic precipitation and the low neutralization capacity of area soils.