

Patuxent Wildlife Research Center

Aquatic Research to Support SALCC Science Needs



- The Challenge:** To support conservation planning, the South Atlantic Landscape Conservation Cooperative (SALCC) identifies priority science needs that include: *developing predictive models for species ranges; collecting data to develop habitat relationships for species of conservation concern; and developing models that integrate hydrology, water quality and bio-integrity to identify responses to conservation actions.* A major challenge in developing predictive models of species distributions or species responses to conservation actions entails identifying and testing for those habitat and landscape features that most strongly influence population processes and thus the ability of habitats to support species over the long-term. For many imperiled stream fishes, multiple factors including stream network connectivity, stream geomorphology, land use and effects on water quality, and streamflow regime are expected to influence species distribution, persistence and response to management actions.

- The Science:** Collaborating scientists from the USGS Patuxent Wildlife Research Center and the University of Georgia are using archived collection data to develop and test models to predict occurrence of stream fishes using geographic variables assessed at alternative spatial resolutions, and in relation to species-specific traits, with the goal of generating models that may be transferable to similar species in different river systems. For example, scientists are testing the usefulness of GIS-derived stream channel data for predicting spawning locations of the robust redhorse (*Moxostoma robustum*), a migratory river fish endemic to the South Atlantic region and a target of conservation efforts. Research to begin in Spring 2012 will involve use of acoustic technology to record responses by spawning redhorse to flow variation downstream from dams, to inform regulated-flow management where conserving river fishes is an objective.

- The Future:** Models developed in this effort will provide general guidance for future needs to predict distributions of stream fishes (or, e.g., important spawning habitats) for regions where collection records are limited, and potential responses of river fishes to variation in dam-regulated flows during reproductive periods.

