

## **Causes and Consequences of Land-cover Change in the Southern Appalachians**

### *PROJECT SUMMARY*

Our goal is to develop a predictive understanding of the social, economic, and environmental factors that drive land cover change in the [southern Appalachians](#) and the ecological consequences of those changes in landscape pattern for regional C cycles and for terrestrial and aquatic biodiversity. We will do this with an integrated program that recognizes humans as an integral part of the Southern Appalachian landscape. We combine the long-term perspective of change in the vegetation and in C stores since the Pleistocene with recent changes in land cover and modeling of human decisions regarding land use to understand past and likely future drivers of changes in landscape pattern in the region. We consider the effects of these landscape changes on regional C storage and rates of flux and on the biota of a region that is characterized by high biodiversity.

### **The proposed research has six specific objectives:**

- (1) Understand the role of fire in governing vegetation and C cycling changes in the Southern Appalachians since the late Pleistocene
- (2) Document the history of land cover change in the region during the past 50 years;
- (3) Identify and model economic and social factors structuring landscape pattern;
- (4) Document and model the ecological consequences of land cover change for regional C pools and fluxes;
- (5) Predict effects of land cover change on native tree, herb, and bird assemblages
- (6) Predict effects of land cover change on assemblages of stream benthic invertebrates and fishes.