



Landscape Change

Affected Parks

Big South Fork NRA (BISO)
Blue Ridge Parkway (BLRI)
Obed Wild and Scenic River (OBRI)

Importance / Issues

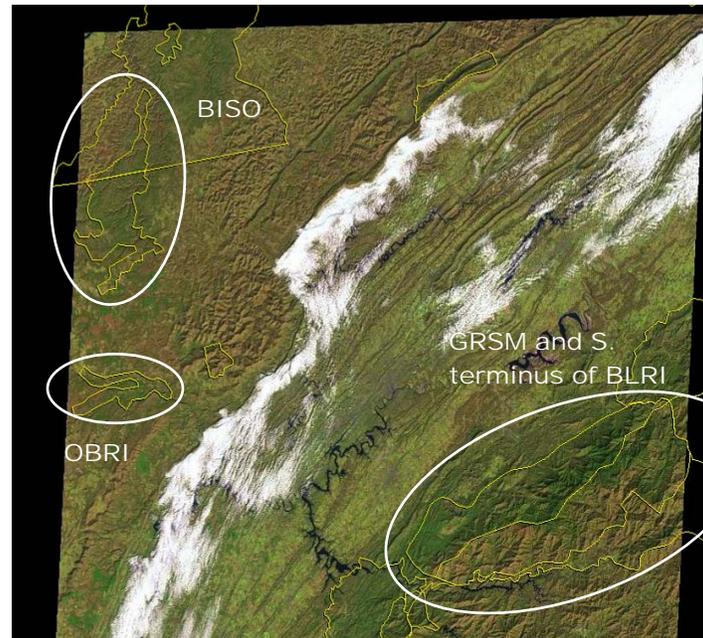
This protocol will address two broad categories of landscape-level change: 1) changes in external land cover and land use patterns potentially impacting resources within the parks; and, 2) changes in the composition and structure of dominant vegetation types within the parks.

External landscape changes are very important to monitor because they may provide an early indication of resource changes to be expected within the parks. External land cover and land use patterns influence Network park resources in many ways. Development along park boundaries may fragment sensitive habitats, introduce exotic species, alter animal migration patterns, spoil scenic vistas, or expand wildland-urban interface zones. Upstream resource extraction, development, or water withdrawal may impact water quality and quantity in downstream environments within the parks.

Within the parks, the arrangement of habitats, as well as differences in habitat quality, influence the ecological functioning of plants and animals in the landscape. Despite their protected status and considerable acreage, Network parks have been altered by numerous biotic and abiotic factors which continue to threaten their ecological integrity. The balsam wooly adelgid, for example, has nearly eliminated mature Fraser fir from high-elevation spruce-fir forests in the Southern Appalachians, and the hemlock adelgid is currently eliminating both eastern species of hemlock. In coming years, as temperature and precipitation regimes change, and infestation by exotic species accelerates, the composition and condition of habitats within the parks will likely be significantly altered.

Preliminary Monitoring Objectives

Our specific objectives are:



A Landsat 7 image from 1999 showing portions of all four Network parks.

- 1) To periodically (once every 5 to 10 years) determine status and trends in the areal extent and configuration of land use and land cover (Anderson Level II) adjacent to park lands, in order to evaluate large scale changes affecting park resources;
2. To periodically determine status and trends of key landscape metrics (e.g. proportion of area in different cover types, number and density of patches, mean patch size, patch connectivity) of lands adjacent to the parks;
3. To periodically document long-term changes in the abundance, distribution and health of dominant vegetation types within the parks.

Protocol Development and Status

The protocol will present guidance and a variety of methods for assessing changes in external land cover/land use, as well as changes in vegetation community composition and condition

within the parks. The protocol will emphasize remote-sensing techniques, and will include a pilot study at BISO, BLRI and OBRI using Landsat imagery to evaluate land cover and land use changes outside park boundaries over the last 20 years. At BISO, the study will focus on resource extraction in the New River drainage, as well as priority developed areas adjacent to the park; at BLRI the study will include an analysis of landscape change in rapidly-developing versus relatively-undeveloped areas adjacent to the boundary in northern North Carolina and southern Virginia; at OBRI, the focus will be on fast developing watersheds upstream of the park, including the Obed River and Daddy's Creek watersheds.

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