SECOND INTERNATIONAL WILDLAND FIRE ECOLOGY AND FIRE MANAGEMENT CONGRESS AND FIFTH SYMPOSIUM ON FIRE AND FOREST METEOROLOGY

16—20 November 2003 Orlando, Florida

Cover image: Prescribed burn in cutthroat grass (Panicum abscissum) and south Florida slash pine (Pinus elliottii var. densa) at Archbold Biological Biological Station, Florida.

Photo by R. Myers, The Nature Conservancy

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generated visualizations made with the Stand Visualization System (SVS), and tabular and graphical canopy fuel data derived from the field study.

At the attended poster session, we will present a demonstration of digital image manipulation techniquies for improving image quality using Adobe Photoshop 7.0. We also demonstrate a simple technique for making 3-D stereo images using standard image editing software. Both techniques can be used with images acquired with a digital camera or with a film or slide scanner.

P1.2

CHARACTERIZING FUEL BEFORE AND AFTER PRESCRIBED FIRE IN AN APPALACHIAN HARDWOOD FOREST ON THE CUMBERLAND PLATEAU, KENTUCKY

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It is well known that different fuels may affect fire intensity and severity, yet in central Appalachian hardwood forests, few studies have characterized fuels and the relationship between fuel loading and fire behavior. Further, it has been suggested that the litter of different deciduous tree species, such as oaks, are more flammable, but this needs to be tested in the context of landscape scale prescribed burning. Fuel loading was measured in January and February 2003 using Brown's planar intercept transects method and by collecting 30 X 30 cm sections of the forest floor. Fuels were re-sampled after a severe ice storm in February 2003 and again after prescribed burns were conducted in each of three study areas in April 2003. Management prescribed fires were ignited either by hand or by helicopter, in early or mid-April, resulting in considerable variability in fire intensity and severity among the three study sites. Litter was the primary fuel that carried the fires, with reductions in woody fuel loads strongly influenced by ignition method and fuel moisture. Ice storms increased fuel loading and are undoubtedly an important vector for woody fuel additions; however, the greenness of the new fuels from the 2003 ice storm prevented them from burning.

P1.3

PREDICTING EFFECTIVENESS OF NEVADA GREENSTRIP FUEL BREAKS: ISSUES OF ESTABLISHMENT SUCCESS AND SCALE

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Land managers in Nevada and the Great Basin have used greenstrips and similar vegetative fuel breaks for almost two decades in an attempt to mitigate wildfires and the spreading annual invasive Bromus tectorum (cheatgrass, downy brome). While the implementation of these fuel breaks has increased, there has been limited monitoring of fuel breaks to determine establishment success of the seeded species. Additionally, previous studies of wildfire behavior change in fuel breaks have not addressed issues of scale and resolution in either the fuel break or the fire behavior modeling programs. Establishment success was evaluated on two recently constructed greenstrips in northern Nevada, and fire behavior changes were predicted using the BehavePlus 1.0 and FlamMap 2.0 (beta version) fire behavior modeling programs. Neither greenstrip exhibited successful establishment of perennial species. For fire behavior, the reduction of the overall fuel load reduces the flame lengths and heat intensity produced on the greenstrips, but the increase in annual species composition and fine fuels produces increased rates of spread. Additionally, the increase in fine fuels points to increased ignition potential on these sites. Scale issues are addressed by comparing the fire behavior outputs on 10m and 30m grid cell-sizes, with the finer resolution giving a more accurate picture of fire behavior potential for the site. Recommendations are made for ways to increase the effectiveness of the greenstrips.

P1.4

STEREO PHOTO SERIES FOR QUANTIFYING NATURAL FUELS IN THE AMERICAS

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Photo series are useful tools for quickly and inexpensively evaluating vegetation and fuel conditions in the field. The natural fuels photo series is a collection of data and photographs that collectively display a range of natural conditions and fuel loadings in a wide variety of ecosystem types throughout the Americas from central Alaska to central Brazil. Fire managers are the primary target audience of the natural fuels photo series, although the data presented will also prove useful for scientists and managers in other natural resource fields. Phase I included 18 ecosystem types in the United States organized geographically into six volumes. Phases II and III have added volumes for ecosystem types in Hawaii (grassland, shrubland, woodland, and forest), Alaska (hardwoods with spruce understory), the Lake States (jack pine), the southeast United States (sand hill, sand pine scrub, and hardwoods with white pine), and the western United States (California deciduous oak, Oregon white oak, and mixed-conifer with manzanita/ceanothus). Phase III will conclude with a volume for the northeastern United States (pitch pine, balsam fir/red spruce, and mixed hardwoods) to be published in 2005. Potential future work will supplement already published volumes with new series in new ecosystems or additional sites in already published series. A volume has also been produced for savannah (*cerrado*) ecosystem types in central Brazil and a volume is under development for pine forests in Mexico.

P1.5

EVALUATING OPPORTUNITIES AND RISKS OF WILDLAND FUELS MANAGEMENT

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Most land management agencies are locked into a reinforcing feedback cycle in which perceived risks lead to fire suppression, leading to increased risks and further fire suppression. Existing tools and approaches for planning fire and fuels management perpetuate this cycle by focusing on risk while ignoring potential benefits of fire.

Using currently available data and computer programs, we have developed and are refining a GIS-based process that quantifies, simultaneously, the potential risks and opportunities for use of fire across the landscape. Maps, digital data and reports produced during the process include: stand based information on potential fire behavior under a variety of threshold fire weather conditions, fire effects on vegetation, fire effects on species' habitat and landscape structure, fire effects relative to the desired future condition of the landscape, and annual or decadal probability of an area experiencing fire. The process is designed to be used by land managers in any type of agency: federal, state and non-governmental organizations.

Information produced may be used to develop resource targets, fire use zones, or to prioritize areas for WFU, prescribed fire or mechanical treatment. The process is also useful in helping managers and the public understand the trade-offs and consequences of alternative courses of action. When linked to cost data, it can help contain costs by identifying stands in which fire under