

Conference Overview

Tuesday, November 14		
Time/Location	<i>Dogwood I</i>	<i>Dogwood II</i>
8:30–10:00	Michael Tollefson, Superintendent, GSMNP, Welcoming remarks Skila Harris, TVA Director, Plenary address David Crockett, Chattanooga City Councilman, Plenary address	
10:30–12:00	Forest Ecosystem Assessment	Community Visioning
12:00–1:30	Lunch on your own <i>or</i> Community Sustainability Roundtable (information available at registration desk)	
1:30–3:00:	Southern Appalachian Forest Planning Issues	Ecological Implications of the Changing Appalachian Landscape
3:30–5:00	Biodiversity (Part 1)	Smart Growth: Integrating Human and Natural Communities
6:00–7:30	Poster session with “wine and cheese” reception; Presentation of SAMAB awards (<i>Azalea Room</i>)	
Wednesday, November 15		
8:30–10:00	Quentin Bass “Southern Appalachian forest ecosystem and the effects of land use: 8000 BC to AD 2000” Ron Eller “Worlds apart: The separate world views of communities & public agencies in Appalachia”	
10:15–12:00	Biodiversity (Part 2)	In Southern Appalachian, Every Day is GIS Day
	Invasive Species	
12:00–1:30	Lunch on your own <i>or</i> NEPA Roundtable <i>or</i> SAMAB/CESU Roundtable (information available at registration desk)	
1:30–3:00	Grassy Bald Management Panel	A Map is Worth 1000 Pictures: Improving Communication and Decision Making with GIS
3:30–5:00		Environmental Education
6:00–8:00	Reception at GSMNP Sugarlands Visitors Center	
Thursday, November 16		
8:30–12:00	Options for Improving Air Quality	Directions for Watershed Management in the Southern Appalachians
12:00	Conference Adjourns	



11TH ANNUAL SAMAB FALL CONFERENCE

WHERE THE RUBBER MEETS THE ROAD: THE INTERFACE BETWEEN PUBLIC AGENCIES AND COMMUNITIES

The purpose of the 11th annual SAMAB Fall Conference is to identify and begin to clarify challenges, possible solutions, and needed actions that will better link communities and public agencies.

Acknowledgments



SAMAB greatly appreciates the outstanding assistance and cooperation of the following individuals and organizations that have worked to make this conference a success.

Bob Shepherd, Executive Director, Land-of-Sky Regional Council
SAMAB Conference Chairperson and SAMAB Foundation Treasurer

Nancy Herbert, USDA Forest Service, Southern Research Station
SAMAB Executive Committee Chair

Larry Hartmann, Great Smoky Mountains National Park
SAMAB Executive Committee Vice-Chair

Eleventh Annual SAMAB Conference Planning Committee:

Committee Chair: Bob Shepherd, Land-of-Sky Regional Council

Robb Turner, SAMAB

Bob Butler, US Fish & Wildlife Service

Harold Draper, Tennessee Valley Authority

Thomas Holmes, US Forest Service

Jennifer Knoepf, US Forest Service

Alan Jones, Tennessee Department of Environment and Conservation

Wolf Naegeli, The University of Tennessee Systems Development Institute

Terry Seyden, US Forest Service

Rodney Snedeker, US Forest Service

Sherry Estep, SAMAB Coordinating Office

Jane Johns, SAMAB Coordinating Office

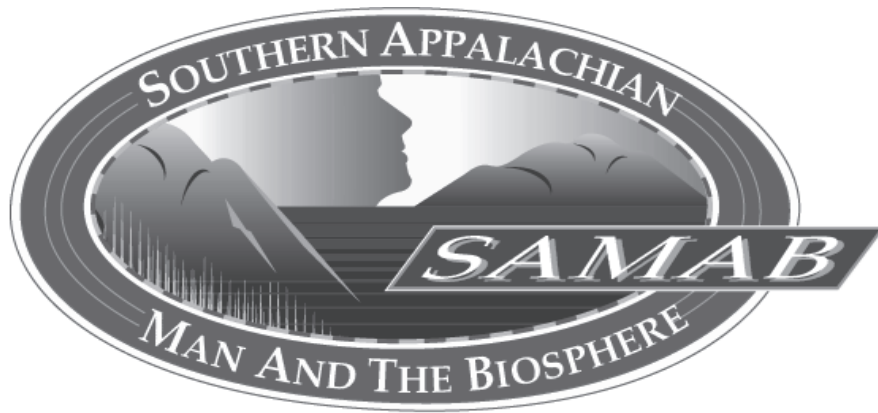
Conference Cosponsors:

The SAMAB Cooperative

The SAMAB Foundation

The Joint Institute for Energy and Environment

The Great Smoky Mountains National Park



SAMAB Awards

Hinote Award

presented to

Nancy Herbert

Assistant Director, US Forest Service Southern Research Station;
Chairperson, SAMAB Executive Committee

SAMAB Foundation Service Award

presented to

George Briggs

Director, North Carolina Arboretum;
President, SAMAB Foundation

Detailed Conference Program

TUESDAY, NOVEMBER 14

7:30 Registration opens (*hotel lobby*)

8:00–8:30 Continental breakfast (*indoor pool area*)

	<i>Dogwood I (meeting room)</i>	<i>Dogwood II (meeting room)</i>
8:30–10:00	<p>Welcome: (p. 11) Robb Turner, SAMAB Executive Director Larry Hartmann, Chief, Resource Management and Science, Great Smoky Mountains Nat'l Park Michael Tollefson, Superintendent, Great Smoky Mountains National Park</p> <p>Plenary Addresses: Skila Harris, TVA Director David Crockett, Chattanooga City Councilman; Director of The Chattanooga Institute</p>	
10:00–10:30	Break	
10:30–12:00	<p>Forest Ecosystem Assessment Chair: Terry Seyden, U.S. Forest Service</p> <p>Harold Draper, “The Southeastern chip mill controversy: The first 10 years” (p. 13) Rex Schaberg, et al., “Economic and ecologic impacts associated with wood chip production in North Carolina” (p. 14) John Greis, “Southern Forest Resource Assessment: Overview” (p. 15) Dave Wear, “Southern Forest Resource Assessment: Status and trends” (p. 15)</p>	<p>Community Visioning Chair: John Peine, USGS</p> <p>Connie Backlund and David Quinn, “Partners in planning: Village of Flat Rock, North Carolina, and Carl Sandburg Home National Historic Site” (p. 17) Arleen Scheller, “The Western Appalachian alternative to the AT: A visioning process for the Southern Appalachians” (p. 17) Robert Cassada, “Foot bridge over the James River” (p. 18)</p>
12:00–1:30	<p>Lunch on your own or Community Sustainability Indicators Roundtable (box lunch available to roundtable registrants only; <i>Highlander Room, hotel 2nd floor</i>) (p. 19)</p>	
1:30–3:00	<p>Southern Appalachian Forest Planning Issues Chair: Terry Seyden, U.S. Forest Service</p> <p>Hugh Irwin, et al. “Landscape conservation areas in the Southern Appalachians” (p. 21) Tim Mersmann, “Species viability: A framework for meeting the legal challenges and conservation opportunities in National Forest Plan revision” (p. 21) Bob Wilhelm, “Southern Appalachian Forest Plan Revisions and Update” (p. 22)</p>	<p>Ecological Implications of the Changing Appalachian Landscape Chair: Wolf Naegeli, UT Systems Dev. Institute</p> <p>Rick Durbrow, “Integrating community greenspace planning within an ecological framework” (p. 23) Roger Tankersley, “Neotropical migratory birds in the eastern United States: A landscape view of migration stopover habitats and pathways” (p. 23) Niki Nicholas, “TVA air quality research program in the Great Smoky Mountains National Park” (p. 24)</p>
3:00–3:30	Break	

* Page numbers indicate on what page the corresponding abstract is found.

** Activities occur in Dogwood I and Dogwood II rooms, unless otherwise noted.

*** Speakers' affiliations are provided with their abstracts.

TUESDAY, NOVEMBER 14 (continued)

	<i>Dogwood I (meeting room)</i>	<i>Dogwood II (meeting room)</i>
3:30–5:00	<p>Biodiversity (Part 1) Chair: Bob Butler, US F&WS</p> <p>Becky Nichols, et al., “The ATBI: Current status and early results” (p. 27)</p> <p>P.L. Lambdin, et al., “A case study on biodiversity: Cataloguing the native arthropod species” (p. 27)</p> <p>George Bukenhofer, “Sensitive species: One important tool in conserving biodiversity in national forests” (p. 28)</p>	<p>Smart Growth: Integrating Human & Natural Communities in the Southern Appalachians Chair: John Peine, USGS</p> <p>Virginia Faust, “Designing better places” (p. 29)</p> <p>F. Paul Baxter, “Economic development and information technology” (p. 29)</p> <p>Andrew Schiller, “In search of sustainable American communities: Relationships among environmental, social and economic conditions for SAMAB cities, and those of the nation” (p. 30)</p>
6:00–7:30	<p>Posters, wine and cheese (Azalea Room) Interactive poster session, with light hors d’oeuvres and cash bar. Poster abstracts are on pages 31-37.</p>	

WEDNESDAY, NOVEMBER 15, morning

8:00–8:30 Continental Breakfast (*indoor pool area*)

	<i>Dogwood I (meeting room)</i>	<i>Dogwood II (meeting room)</i>
8:30–10:00	<p>Quentin Bass, Forest Archaeologist, Cherokee National Forest, U.S. Forest Service. “The Southern Appalachian forest ecosystem and the effects of land use: 8000 BC to AD 2000.”</p> <p>Ronald Eller, Professor, University of Kentucky; Appalachian Regional Commission’s Appalachian Scholar. “Worlds apart: The separate world views of communities & public agencies in Appalachia.”</p>	
10:00–10:15	Break	
10:15–11:10	<p>Biodiversity (Part 2) Chair: Bob Butler, US F&WS</p> <p>Robin Suggs, “New Opportunities in Native Plants” (p. 41)</p> <p>Owens et al., “Special forest products: Conservation strategies for sustainable plant collection of Southern Appalachian forests” (p. 42)</p> <p>Simon et al., “Modeling for rich cove forest communities: A treasure for special forest products—A first approximation” (p. 42)</p>	<p>In Southern Appalachia, Every Day is GIS Day Chair: Robb Turner, SAMAB</p> <p>Wolf Naegeli, “SAMAB’s leadership in the geospatial revolution” (p. 45)</p> <p>Tom Tribble, “Geographic information: A strategic resource for North Carolina” (p. 45)</p> <p>David Gardner, “Kentucky Pride” (p. 46) (session ends at 12:00)</p>
11:10–12:00	<p>Invasive Species Chair: Jack Ranney, UT EERC</p> <p>Dane Kuppinger et al., “The state of invasive plant knowledge and control on managed lands of the Southern Appalachians” (p. 43)</p> <p>Patricia Cole, “Bringing the public into the exotic species debate” (p. 43)</p> <p>Jerome Grant/Paris Lambdin, “Invasive plant species along highways: Bridging private practices and natural area needs” (p. 44)</p>	

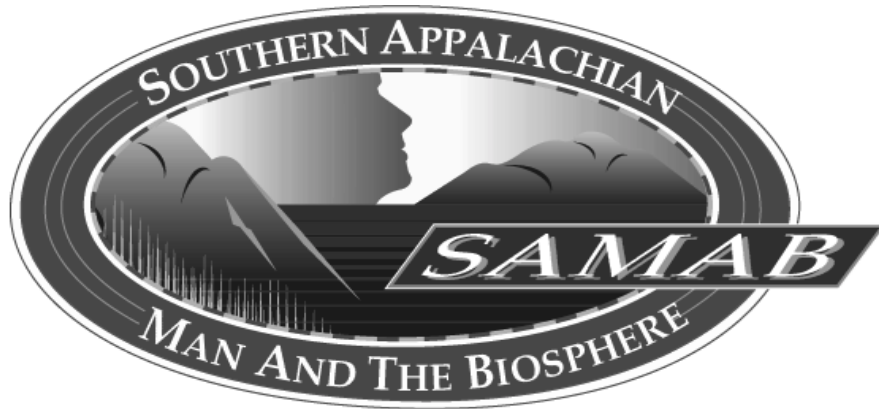
WEDNESDAY, NOVEMBER 15, afternoon

	<i>Dogwood I (meeting room)</i>	<i>Dogwood II (meeting room)</i>
12:00–1:30	Lunch on your own or NEPA Roundtable or SAMAB/CESU Interactions Roundtable Box lunches at roundtables available by registration only <i>(Highlander Room, 2nd floor of hotel)</i> NEPA Roundtable (led by Harold Draper): The SAMAB Environmental Assessment Database and Trends in Environmental Impact Assessment in the Southern Appalachians (p. 47) SAMAB/CESU Interactions Roundtable: Participants in each organization and interested conference participants discuss the relationship between the two organizations (p. 47)	
1:30–3:00	Grassy Bald Management Panel Chairs: Kris Johnson, GSMNP; Judy Murray, Southern Appalachian Highlands Conservancy Nora Murdock, “Rare species and bald management on Roan Mountain, NC & TN” (p. 49) Paul Bradley, “A role for the public in bald management” (p. 49) Peter Weigl and T.W. Knowles, “The critical role of animals in the origin and management of the Southern Appalachian grassy balds” (p. 50) Discussion	A Map Is Worth a Thousand Pictures: Improving Communication and Decision Making with GIS Chair: Wolf Naegeli, UT Systems Dev. Institute Jay Tomlinson, “Visual sensitivity mapping of the Blue Ridge Parkway: Conservation planning and land analysis” (p. 53) Karen Burhenn, “Identifying recent surface mining activities in Appalachia” (p. 54) David Meriwether and Wayne Owen, “Forest Service Inventory and Monitoring Program” (p. 54) Jeff Pfitzer, “A methodology for natural resource analysis appropriate for county level planning” (p. 54)
3:00–3:30	Break	
3:30–5:00	Grassy Bald Management Panel (continued) Tom Blevins, “Grassy balds management on the Mount Rogers National Recreation Area: Where we have been, where we are, and where we are going” (p. 50) Ben Lawhon and Morgan Sommerville, “Grassy bald management: The ATC perspective” (p. 50) Kris Johnson and Jennifer Beeler, “Management of two grassy balds in Great Smoky Mountains National Park” (p. 51) Discussion	Environmental Education Chair: Libby Wilcox, NC Department of Environment and Natural Resources Al Fritsch, “The interface between public agencies and communities’ environmental education: Connecting communities to their natural heritage” (p. 55) Anthony Rabern, “Georgia’s wildlife education initiative” (p. 55) Ina Warren, “Teaching botany as if it mattered” (p. 56)
6:00–8:00	Food and Fun. Reception at GSMNP Sugarlands Visitors Center. Heavy hors d’oeuvres and a film introduction to the Smokies.	

THURSDAY, NOVEMBER 16, Morning

8:00–8:30 Continental Breakfast (*indoor pool area*)

	<i>Dogwood I</i>	<i>Dogwood II</i>
8:30–12:00	<p>Options for Improving Air Quality Chairs: Paul Muller, NC DENR, John Sheffield, JIEE & ORNL</p> <p>Discussion panel participants: (p. 57) Alan Jones, TN Dept. of Environment and Conservation Gary Harris, TVA Green Power Switch Program Paul Muller, NCDENR (moderator) Kay Prince, US EPA Region 4 Andrew Goldberg, NC Mountain Air Quality Coalition Michael Shore, Environmental Defense</p> <p>Presentations: Gary Harris, “Green Power Switch” (p. 58) Jeff Welch, “Regional Transportation Alternatives Plan for East Tennessee” (p. 58) Linda Giltz, “Some transportation recommendations for western North Carolina” (p. 58) Carla Thomure, “Electric and electric- hybrid buses—The real scoop” (p. 59)</p> <p>Session will break from 10:15–10:30</p>	<p>Directions for Watershed Management in the Southern Appalachians Chair: Jerry Ryan, USGS</p> <p>Kelly Russell, “Conserving aquatic biota on southern National Forests” (p. 61) Sharon Taylor, “Little Tennessee Watershed Association” (p. 61) Tere McDonough, “Stewardship of the Clinch-Powell Watershed” (p. 62) Tom Holmes, et al., Costs and benefits of riparian restoration in the Little Tennessee River Watershed” (p. 62) Kent Evans, “Conasauga River Alliance Watershed Project—USDA Forest Service integration into this ongoing public/private partnership” (p. 63) Randy Fowler, “Update on the US Forest Service Chattooga restoration demonstration project” (p. 63)</p> <p>Session will break from 10:15–10:30</p>
12:00	Conference Adjourns	



CONFERENCE ABSTRACTS

(organized by session)

**11th Annual SAMAB Fall Conference
November 14-16, 2000
Gatlinburg, Tennessee**



PLENARY SESSION

Tuesday, November 14, 2000

8:30 a.m. – 10:00 a.m.



Welcoming Remarks:

Robert S. Turner, Executive Director, SAMAB

Larry Hartmann, Chief, Resource Management and Science, Great Smoky Mountains National Park;
Vice-Chair, SAMAB Executive Committee

Michael Tollefson, Superintendent, Great Smoky Mountains National Park

Plenary Addresses:

Skila Harris, TVA Director

David Crockett, Chattanooga City Councilman; Director, of The Chattanooga Institute

FOREST ECOSYSTEM ASSESSMENT

Tuesday, November 14, 2000

10:30 a.m. – 12:00 p.m.

Session Chair: Terry Seyden, U.S. Forest Service



The Southeastern Chip Mill Controversy: The First 10 Years

Harold M. Draper, Tennessee Valley Authority

As the pulp and paper industry has expanded into hardwood forest areas of the South and Midwest, permitting agencies have generally taken the position that they are not responsible for the impacts of forest harvesting on private lands and have avoided assessing forestry impacts when considering chip mills, log loading, or other forest industry facilities. To date, only one federal environmental impact statement has been prepared on the impacts of chip mill development. This Final Environmental Impact Statement, entitled Chip Mill Terminals on the Tennessee River, was completed in 1993 by the Tennessee Valley Authority (TVA), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (FWS). In its Record of Decision on the project, published on May 13, 1993 in the Federal Register (58 FR 28429-28433), TVA decided not to make its lands available for use by three chip mill applicants and denied requests for chip mill barge terminals on the river. Among the major environmental issues were landscape-level issues relating to forest ecology and the effects of the new facilities on existing forest industries. In addition, the effectiveness of voluntary Best Management Practices to protect water quality was an issue, as were biodiversity, ecologically sensitive areas, archaeological sites, endangered species, and regional trends in hard mast production. Projecting impacts was found to be subject to substantial uncertainties and speculation because the location of the harvesting activities and their impacts depend on the decisions of individual landowners who are not under regulatory control.

The denial did not end the controversy over the NEPA responsibilities of agencies in considering these types of requests. Subsequent to the denial, there were two court challenges to federal agency actions on this issue. The forest industry filed suit alleging that TVA exceeded its statutory authority when it considered “remote sourcing area impacts which are only tenuously related to the subject of the requests for approval.” In 1995, the U.S. District Court for the Northern District of Alabama dismissed this lawsuit, stating that TVA did not exceed its authority. The second challenge was from four environmental groups alleging NEPA and Endangered Species Act violations by TVA and USACE in permitting docks for log loading permits along the Tennessee and Cumberland Rivers. This suit was dismissed for lack of standing in 1998.

Efforts to address the issue continue at the federal, state, and local levels. In 2000, Missouri and North Carolina have completed studies on the issue. Chip mills are also part of the sustainability issues being considered in the Southern Forest Resource Assessment of the federal Southeastern Natural Resources Leaders Group.

Abstract of Study Results:
Economic and Ecologic Impacts Associated with Wood Chip Production
in North Carolina

Rex Schaberg, North Carolina State University; P.B. Aruna, Frederick Cubbage, Daniel Richter,
George Hess, Robert Abt, James Gregory, Sarah Warren,
Anthony Snider, Brandon Greco, Stacy Sherling, and John Dodrill

The North Carolina Wood Chip Mill Study found that North Carolina's forest land area increased from 1938 to 1964, and has decreased since then. Large forest land losses occurred in North Carolina from 1982 to 1997, averaging about 77,000 acres per year, or -0.35 annually. Between 1990 and 1997, pine pulpwood production volumes increased 24%; hardwood pulpwood production increased 17%; and combined pulpwood production increased 21%. In 1997, wood chip mills processed about 27% of the state's pulpwood harvest, and 12% of the state's total timber harvest; 25% of North Carolina pulpwood production was exported to other states, and 6% was exported out of the country. Wood chip mills were statistically correlated with an increase in timber production and harvest in the state.

Timber supply projections indicated that softwood removals on private forest lands exceeded growth as of 1990, and would continue to do so. Hardwood removals would exceed growth by about 2005, decreasing projected inventory slightly from 1990 to 2020. The planted pine area was projected to increase about 1.1 million acres between 1990 and 2020, and natural pine management types were projected to decrease by about 1.1 million acres. All other natural forest management types were projected to decline from 1990 to 2010. These timber harvest increases would alter forest structures on private forest lands, generally creating more young seral stages after harvests, and fewer old growth seral stages, especially in the east. The addition of public lands would not change the projections much in the Coastal Plain; reverse much of the generally adverse wildlife habitat impacts in the Piedmont; and improve conditions even more for species in the Mountains.

Soil erosion losses from wood chip mills and timber harvesting were a small share of the state total erosion, and were most important on a local watershed basis. State forestry surveys indicate that BMPs have been widely used, with more than 90% of timber harvests inspected being found in compliance. Visual surveys of 12 wood chip mills found that they have effective stormwater management plans, with little indication of adverse effects on water quality from mill discharges. Accelerated channel erosion was the most common stormwater problem at wood chip mills, and could be reduced by using BMPs (detention ponds, water bars, filter, terracing, etc.).

As of 1996, forest products firms employed 105,000 people and the nature-based tourism industry employed about 91,000 people. Total employee compensation in the wood-based industries was \$3.2 billion; for tourism it was \$1.4 billion. Industrial output was \$13.5 billion for the forest products industry in 1996, and \$3.9 billion for the tourism sector. Total sales value for all travel and tourism in 1984 was \$8.3 billion. Value added for the forest products industry was \$4.9 billion and was \$2.2 billion for the nature-based tourism sector. From 1977 to 1996, the wood-based industries grew more slowly than the rest of the state's economy; the nature-based tourism sector grew more rapidly. Nonmarket values estimates could equal or exceed direct market values estimates.

Wood chip mills did contribute to greater integration among timber markets in the state, and led to up to \$5 million or more in added returns received by nonindustrial private forest landowners. Social impact analysis found that polarization is increasing particularly because of the growing perception that private properties provide public benefits, resulting in conflict and confusion related to private property rights and responsibilities.

Southern Forest Resource Assessment: Overview

John Greis, USDA Forest Service

The Southern Forest Resource Assessment was initiated in the spring of 1999 to provide an evaluation of the status of a wide variety of forest resources in 13 southern states. Led by the U.S. Forest Service, other participating federal agencies include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the Tennessee Valley Authority. State forestry agencies, universities and other state agencies are cooperating as well.

The Assessment is organized around 23 questions, each having a Question Manager responsible for its solution. The questions were derived from interactions with scientists, resource managers and the interested public. Question Managers are scientists from the federal agencies and academia. They comprise the Assessment Team.

Southern Forest Resource Assessment: Status and Trends

David Wear, USDA Forest Service

(see Greis abstract above)

COMMUNITY VISIONING

Tuesday, November 14, 2000

10:30 a.m. – 12:00 p.m.

Session Chair: John Peine, USGS Southern Appalachian Field Station



Partners in Planning: Village of Flat Rock, North Carolina, and Carl Sandburg Home National Historic Site

Connie Backlund, Carl Sandburg Home National Historic Site; David H. Quinn, North Carolina Department of Commerce

To better control their community's future development, the Village of Flat Rock in Henderson County, North Carolina, incorporated in 1995. In the subsequent years the Village and Carl Sandburg Home National Historic Site, which is located in the heart of the Village, have worked cooperatively on the community's visioning process, zoning ordinance, and subdivision ordinance. These processes and ordinances have afforded the historic site a consulting role for any telecommunications towers or subdivisions proposed for the park's viewsheds. In addition buffering, ridge protection, and specially zoned districts all convey the community's value of preserving their cultural and natural heritage. This case study presentation will highlight these partnership planning processes.

The Western Appalachian Alternative to the AT: A Visioning Process for the Southern Appalachians

Arleen Scheller, Cumberland Trail Conference

Everyone has heard of the Appalachian Trail, a 2,100-mile greenway and recreational trail that travels through the Southern Appalachian mountains northward to Canada. The AT has provided a premier recreational experience for thousands of people and has also served to protect and preserve a linear portion of the Appalachian Mountain chain.

There is a sister vision now taking shape—the Western Appalachian Alternative to the AT (WAA) — a regional conservation initiative and long distance greenway and recreational trail through the Cumberland Plateau and Cumberland Mountains from Alabama to New York—the geographic range of the Cumberland Plateau. Think of the positive ecological implications of protecting a portion of the Cumberland Plateau through a multi-state greenway system.

The Cumberland Trail Conference in Tennessee is actively pursuing the concept of a Western Appalachian Alternative to the AT, with the assistance of the Rivers & Trails Conservation Assistance office (RTCA) in Chattanooga and the American Hiking Society. This presentation of slides, a regional map, and discussion will reveal what is taking place right now to make the WAA vision a reality.

Foot Bridge Over the James River

Robert O. Cassada, Virginia Department of Transportation

The Foot Bridge across the James River at Snowden was dedicated on October 14, 2000. This bridge is a joint effort of the Natural Bridge Appalachian Trail Club, the U.S. Forest Service, the National Park Service, CSX Corporation, Virginia Power, and two county governments, as well as VDOT. Principal financing was provided through the VDOT enhancement program, as a rails-to-trails conversion. The local matching requirement was fulfilled by donation of the old railroad piers, engineering services of the Forest Service, and volunteer labor to construct new links to the Appalachian Trail. The bridge is just over 625' in length, and is reported to be the longest pedestrian-only bridge in the park system. This presentation documents the construction and focuses upon the major obstacles that were overcome during the planning and implementation of the project. The project supports the community and regional visioning theme in that it was proposed through a grassroots effort led by William E. "Bill" Foot and his Natural Bridge Appalachian Trail Club. Mr. Foot died on May 19 at age 53. Because of his leadership in the project, the bridge has been named in his memory.

Lunch-time Roundtables:



COMMUNITY SUSTAINABILITY INDICATORS

(lunch by registration)

Tuesday, November 14, 2000

12:00 p.m. – 1:30 p.m.

**Organizers: John Peine, USGS Southern Appalachian Field Station;
Wolf Naegeli, University of Tennessee Systems Development Institute**

Roundtable organizers, John Peine and Wolf Naegeli, invite you to a discussion of what communities can do to control sprawl and to protect and enhance their quality of life. To follow up on the Community Sustainability Indicators Workshop, held by SAMAB in 1998, we are planning a Sustainable Communities Initiative to provide southern Appalachian communities with information and tools they can use as they work toward sustainability of their social, cultural, economic and environmental resources.

SOUTHERN APPALACHIAN FOREST PLANNING ISSUES

Tuesday, November 14, 2000

1:30 p.m. – 3:00 p.m.

Session Chair: Terry Seyden, U.S. Forest Service



Landscape Conservation Areas in the Southern Appalachians

Hugh Irwin, Susan Andrew, Trent Bouts, and Glen Locasio, Southern Appalachian Forest Coalition

The Southern Appalachian Region is tremendously rich in biological diversity. An effective approach for conservation of this resource is to identify landscape-scale conservation areas and to insure integrity of these areas. If ecologically intact, a landscape area, defined as an interacting cluster of ecosystems, contains a diversity of habitats and a wide variety of interacting species. It is also large enough to contain a breeding population of wide-ranging species. The Southern Appalachian Forest Coalition has identified a number of landscape conservation areas throughout the region. The presentation will describe this regional network of areas and demonstrate some methods of evaluating the integrity of landscape areas including a weighted, road density measure.

Species Viability: A Framework for Meeting the Legal Challenges and Conservation Opportunities in National Forest Plan Revisions

Tim Mersmann, USDA Forest Service, Southern Region

The Forest Service is the only federal agency with a statutory mandate to specifically manage for biodiversity. Regulation and policy direct the agency to provide for well-distributed viable populations of plants and animals on National Forests. During forest land- and resource- management plan revisions, we will assess and provide for species viability. Although a “viability” mandate has been in place since the early 1980s, our tools and methods to plan and measure have evolved. We will review current concepts and a framework to assess viability as we move forward in plan revisions

Southern Appalachian Forest Plan Revisions Update

Bob Wilhelm, U.S. Forest Service

Most of the Southern Appalachian National Forests—Tennessee, South Carolina, Georgia, Alabama, and Virginia—are in the middle of revising their Forest Plans as required by the National Forest Management Act. This is the decision phase, which follows the assessment phase that was accomplished through the Southern Appalachian Assessment under the auspices of SAMAB. After several months of a slow progress, the revisions now are moving again toward the Draft EIS that will announce a proposed action for each forest's management. Among other steps, the Forests are currently finalizing Habitat Association Reports; updating the list of species that will be analyzed (presently there are more than 1,000 different species); and pulling key information into Viability Assessment Reports. A watershed analysis process is being developed. This analysis will identify those areas where, in addition to the general watershed direction, watershed-specific management direction is needed. A draft management prescription has been developed for riparian areas, and it includes a desired future condition for the riparian ecosystems and standards and guidelines needed to achieve that desired condition.

A general planning timeline for the next year is: (1) fall 2000 through spring 2001, conduct effects analyses and complete viability assessments; (2) spring 2001, provide additional opportunities for the public to work with planners on the alternatives, presenting the preliminary results and effects of the alternatives; (3) spring and summer 2001, write DEISs and Proposed Revised Forest Plans; and (4) fall of 2001, release DEISs and Draft Forest Plans for public review.

Forest Service initiatives, including a roads policy, roadless area conservation, and new planning regulations are in the works and expected to be completed soon. All of these will have some effect on the plan revisions.

ECOLOGICAL IMPLICATIONS OF THE CHANGING APPALACHIAN LANDSCAPE

Tuesday, November 14, 2000

1:30 p.m. – 3:00 p.m.

Session Chair: Wolf Naegeli, U. Tenn. Systems Development Institute



Integrating Community Greenspace Planning Within an Ecological Framework

Rick Durbrow, U.S. EPA, Region 4

Continued population growth in the Southern Appalachian region has prompted many communities to grapple with urban sprawl and the loss of important ecological processes that have helped to define their quality of life. Protecting greenspace has become one method to preserve natural areas, but it is important to understand the relationship between place based community values such as “Bob’s fishing hole” and the larger scale ecological processes that support the fishing hole that “Bob” made famous. This presentation focuses on the integration of community greenspace planning within the context of the larger ecological processes that lie inside and outside of political jurisdictions but should be considered when developing a greenspace strategy. A review of federal programs that may be used to support greenspace acquisition efforts will also be presented.

Neotropical Migratory Birds in the Eastern United States: A Landscape View of Migration Stopover Habitats and Pathways

Roger Tankersley, Tennessee Valley Authority

This ongoing project examines patterns of migratory movements and stopover habitats in the Eastern United States using habitat and corridor models of migrating birds to highlight areas where migratory stopover habitat is essential. Within a Geographic Information System (GIS), I am developing indicators of stopover habitat suitability using multivariate models of environmental quality (landcover, forest fragmentation, road density, forest stand structure, etc.), based on field data collected during spring migration, 1999. These indicators help us understand the landscape- and local-scale environmental factors that determine habitat suitability. I am now in the process of mapping those factors across the eastern United States, creating a habitat ‘surface’ that we will use to model corridors of movement across the region. The habitat patterns will illuminate teleconnections across the landscape by highlighting both the flyways that migrating birds follow, and the habitat locations they choose for stopovers. Movement across the landscape is the key factor in this assessment: quality habitats must be located appropriately along the overland migration route. A random distribution of habitats will not insure the continued success of migratory species in our region.

I am also using NEXRAD weather radar to identify the actual movements of migratory flocks during migration. Working with Adam Kelly of GeoMarine, Inc., we have created a radar database for Spring 2000 migration, capturing images every fifteen minutes, eight hours a night for three months. GeoMarine is currently modifying their algorithms for separating birds from weather and other biological targets, to refine our ability to identify discrete stopover locations. I will apply these algorithms to the Spring 2000 data and to Spring 2001 images. The radar data will help to highlight key stopovers along the migratory path, which can be delimited by recording the origin of nightly flights for large flocks; for example, a particular river basin or ridgeline may be intensively used throughout migration, and would justifiably be called a true hot-spot. Unlike past regional habitat studies, which have relied on published species-habitat relationships to develop models, I will be able to actually see and record the habitats being used. This yields a level of certainty unreachable at this scale using other datasets.

TVA Air Quality Research Program in the Great Smoky Mountains National Park

N.S. Nicholas, T.A. Burnett, S. Mueller, W.J. Parkhurst, W.P. Weatherford, and P.B. West,
Tennessee Valley Authority

The Great Smoky Mountains National Park is a jewel within the Tennessee Valley region. It is the most visited National Park in the country; an International Biosphere Reserve; a tourist destination that significantly contributes to North Carolina and Tennessee economies; and has possibly the world's highest species biodiversity in the temperate forest region. The Park is facing numerous threats including over-visitation, invasion by numerous exotic species, and a deterioration of air quality.

TVA collaborates with a number of research partners including the National Park Service, U.S. Environmental Protection Agency, National Oceanographic and Atmospheric Administration, U.S. Department of Energy, EPRI, and numerous universities and state and local air programs to conduct air quality related research and collaborative projects. Some specific studies include:

Look Rock PM_{2.5} Supersite. This enhanced aerosol monitoring and research facility is being operated over the next several years to determine the relative contribution of various manmade and biogenic emissions to fine particulate matter and to various air quality related values such as visibility.

Regional Ozone Vegetation Effects. This combination field/laboratory/modeling project is designed to identify key environmental indicators that control ozone uptake by foliage at the tree and stand level would allow the prediction of ozone uptake from ozone concentration and key environmental in southern Appalachian hardwood forests.

Utility NO_x Reduction Strategy and Nitrogen Saturation Study. A cooperative long-term study is measuring the different factors that control nitrogen in a forested system. This project will provide important information to assess different NO_x emission reduction strategies and address if and how regional reductions in NO_x emissions impact regional nitrogen environmental levels.

Intermittent NO_x Controls. TVA is examining the feasibility of changing the dispatch order of fossil units in east Tennessee based on environmental considerations. Dispatch order determines which units are operated at what level and frequency to meet power demands. The goal is to determine the potential to mitigate impacts from fossil plant NO_x emissions on regional ozone on days when ozone levels are expected to be high in east Tennessee.

Southern Appalachian Mountain Initiative (SAMI). The Southern Appalachian Mountain Initiative (SAMI) is a cooperative of southeastern states, federal land management agencies, industries, and environmental stakeholders that is performing an integrated assessment of the impacts of multiple

pollutants in the southern Appalachian region. This assessment will include modeling of future-year emissions, atmospheric processes and the response of ecosystem/environmental components to proposed emission changes.

East Tennessee Ozone Study. Because of potential significant economic and environmental impacts from elevated ozone levels, the East Tennessee Ozone Study (ETOS) is developing a measurement and prediction system with the specific goal of developing an air-quality forecasting system for East Tennessee.

The goal of this research program is to better understand the air quality issues affecting the Park and other Class I areas and to ensure that the solutions that we undertake result in effective, beneficial improvements.

BIODIVERSITY, Part 1

Tuesday, November 14, 2000

3:30 p.m. – 5:00 p.m.

Session Chair: Bob Butler, US Fish and Wildlife Service



The ATBI: Current Status and Early Results

Becky Nichols, Chuck Parker, and Keith Langdon, Great Smoky Mountains National Park

The All Taxa Biodiversity Inventory (ATBI) in the Smokies is well underway, and some amazing data is being accumulated. Nearly 100 new species to science have been discovered so far, residing among a number of different taxonomic groups, and the number of new Park records is approaching 500. Research findings, sorting center progress, and science / education program activities of the past year will be presented. Also discussed will be a research project that is being conducted in the Park by USGS-BRD to determine such aspects as cost, time, and the most efficient methodologies for conducting an inventory of this size. This type of information will be extremely useful not only for the completion of this project but also for other natural areas that may attempt a similar type of inventory.

A Case Study on Biodiversity: Cataloguing the Native Arthropod Species

P.L. Lambdin, J.F. Grant, G.J. Wiggins, The University of Tennessee, Department of Entomology and Plant Pathology

A survey for resident species of terrestrial invertebrates was conducted from September 1997 through October 1998 at Arnold Air Force Base (AFB), Tennessee, at nine distinct habitats within 15,783 ha of the Barrens Plateau near Tullahoma, Tennessee. Sites included native barrens grasslands, forested wetlands, upland hardwoods, pine plantation, and two karst wetlands known to support disjunct Coastal Plain assemblages of plants. A total of 1,906 insect species, 106 species of spiders, and two species of ticks representing 30 orders were identified inhabiting the sites. Collection methods yielding the largest numbers of species were sweeps (589), light traps (466), direct sampling (461), and pitfall traps (321). Arthropod species richness varied from a low of 88 species in the maidencane stand at Goose Pond to a high of 621 species in the forest bordering Sinking Pond. An average of 339 insect species were represented at each of the study sites. Eleven arthropod orders were represented by 30 or more species. Seventy-five percent of all arthropods collected were from four insect orders: Coleoptera (678 species), Diptera (325 species), Lepidoptera (197 species), and Hymenoptera (115 species). All species data were incorporated into a database that may be enhanced and used in future conservation and management programs to assess or protect the fauna comprising these habitats. A cost assessment including time, labor, taxonomic specialists, expenses, etc. is provided for this biodiversity study.

Sensitive Species: One Important Tool in Conserving Biodiversity in National Forests

George Bukenhofer, USDA Forest Service, Endangered Species Program, Southern Region, National Forest System

The Forest Service designates species as “sensitive” to focus conservation attention on species before they are federally designated as threatened or endangered. This designation provides an early safety net for species by focusing on protection and restoration measures in all aspects of Forest Service management. The national forests of the Southern Appalachians, because of great diversity of species and habitats, have some of the largest number of species afforded this protective status of any forests in the country. The Regional Forester is revising the list of species designated as sensitive. We will discuss the listing process and some implications for biodiversity conservation.

SMART GROWTH: INTEGRATING HUMAN AND NATURAL COMMUNITIES IN THE SOUTHERN APPALACHIANS

Tuesday, November 14, 2000

3:30 p.m. – 5:00 p.m.

Session Chair: John Peine, USGS Southern Appalachian Field Station



Designing Better Places

Virginia A. Faust, NC Division of Community Assistance

This presentation examines why some areas of communities foster walkability and others that are built to the auto scale do not. This will be done by first reviewing major design principles including scale, orientation, setbacks, rhythm, materials, articulation, roof form, ornamentation and trim, and color. It will then explore the public realm of how we arrange buildings on streets, how we build our streets, how we get around, the role of landscaping, and how all of these elements add up to make a place. The main point of the presentation is to illustrate that when communities establish design guidelines and other standards, it will be easier to have in-fill development that blends in with existing structures. In addition, people will be able to get around on foot, bicycle, and transit as well as by car, which translates into “smart growth.”

Economic Development and Information Technology

F. Paul Baxter, Pellissippi State Technical Community College

Site selection is a process that has an important role in economic development. It consists of companies of all kinds and their agents looking for new places to locate, as well as states, communities and their agents trying to convince these companies that their community or region is the best place to locate. The companies usually have a list of criteria on which a decision will be based. The communities also may have criteria relating to the kinds of companies that they wish to attract. The process often encourages active competition between communities to provide the most consideration for a favorable client. Sometimes in this process, the total interests of the community are not considered because data are not readily available to tell the complete story of a community or a prospective new neighbor.

As the site selection process matures, criteria of companies and communities are both becoming more complex. Participation of the public is becoming more widespread. While wage rates and land and transportation costs are still important, amenities and other values have increased importance. Now

is the time for regions like ours to prepare to tell a more complete story to the prospective new neighbor and the local citizens. Collaborative regional databases may be used as a tool to show relevant information to support telling a more complete regional and community story during the site selection process. This presentation describes a possible approach for the development and management of databases and tools to support the economic development process.

In Search of Sustainable American Communities: Relationships among Environmental, Social and Economic Conditions for SAMAB Cities, and Those of the Nation

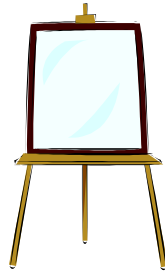
Andrew Schiller, Clark University, The Graduate School of Geography

Human-induced stresses on the environment potentially affect social and economic conditions of communities in complex ways. Causal links capable of illuminating these relationships have proven elusive, particularly at broad scales. Yet a need exists to better understand relationships among desired conditions to help advance sustainability theory and for consideration of potential tradeoffs and to foreshadow possible futures. I have completed a comparative statistical analysis of environmental, social, and economic conditions across U.S. metropolitan areas by assembling and analyzing recent data representing conditions targeted by sustainability proponents and experts from global to local scales. Striking geographic patterns emerged showing regions of the United States where metropolitan areas, including many cities in the Southern Appalachian region, share similar condition sets. Regional patterns also were evident when mapping those metropolitan areas with highest and lowest overall sustainable condition scores. The highest scoring areas were led by the upper Midwest, the northern Great Plains, and areas of New England. Metropolitan areas with the lowest overall scores clustered along the Rio Grande Valley, the San Joaquin Valley, and the southeastern coastal plain. The best scoring metropolitan areas in the southeastern U.S. are in the Southern Appalachian region. For U.S. metropolitan areas overall, environmental degradation increases starkly with metropolitan population size, whereas social and economic conditions considered important for sustainability statistically related to the make up of that population. Social and economic conditions were correlated, but few associations emerged between them and environmental conditions, including degradation, at the metropolitan scale. Further work needs to explore causal relationships and cross-scale linkages.

POSTER AND DISPLAY SESSION

Tuesday, November 14, 2000

6:00 – 7:30 p.m.



Appalachian Bear Center

Tom Brosch, ABC

The Appalachian Bear Center (ABC) is the largest black bear rehabilitation facility in the country. It is a one of a kind 501(c)(3) non-profit organization that provides an urgently needed alternative for wildlife officials trying to save the lives of orphaned black bear cubs and injured black bears. The ABC's three-fold mission is: 1) to educate the public about black bears and the regional threats facing them; 2) to rehabilitate orphaned and injured bears for release to the wild; and 3) to research bear attributes that may help solve other environmental or health issues.

Southeastern Ecological Framework: Leveraging Federal Resources for Greenspace Protection

Rick Durbrow, US EPA Region 4

Continued population growth in the Southern Appalachian region has prompted many communities to grapple with urban sprawl and the loss of important ecological processes that have helped to define their quality of life. Protecting greenspace has become one method to preserve natural areas, but it is important to understand the relationship between place based community values such as Bob's fishing hole and the larger scale ecological processes that support the fishing hole that Bob made famous. This presentation focuses on the integration of community greenspace planning within the context of the larger ecological processes that lie inside and outside of political jurisdictions, but should be considered when developing a greenspace strategy. A review of federal programs that may be used to support greenspace acquisition efforts will also be presented.

Appalachian Farming Systems Research Center

Charles Feldhake, USDA AFSRC

This poster gives an overview of Appalachian Farming Systems Research Center's program, the objective of which is to improve profitability and sustainability of small farms in Appalachia. The program involves such issues as breeding better adapted forages, developing better management systems for hill-land pastures, developing uses for abandoned pastures, and improving land use through agroforestry practices both in pastures and woodlots.

Tennessee Citizens for Wilderness Planning

Sandra K. Goss, TN Citizens for Wilderness Planning

Tennessee Citizens for Wilderness Planning (TCWP) is a state-wide, grassroots, environmental advocacy group based in Oak Ridge. TCWP has taken a lead role in negotiating land conservation and management agreements between national and state government agencies and land owners throughout its 30-year history. The designation of the Obed River as a National Wild and Scenic River, and the creation of the Big South Fork National Recreation Area are some of the organization's earliest accomplishments. More recently, TCWP participated in the transfer of Scott's Gulf from corporate ownership to state management of this fragile pocket wilderness.

One of TCWP's main purposes is to initiate dialogue between members of the public and their various government representatives toward improving the development and implementation of public policy for conservation and environmental protection. Issues of air quality, water quality and quantity, and the maintenance of native biodiversity are central to TCWP's activities. TCWP's reliance on sound, scientific information coupled with sophisticated use of the political process is a model of how communities and public agencies can and should interface to improve environmental decision making.

Impact of Introduced Species on Diversity of Lady Beetles: A Case Study

Jerome F. Grant, Paris L. Lambdin, Gregory J. Wiggins, Adriean J. Mayor,
The University of Tennessee, Department of Entomology and Plant Pathology

Species composition and diversity of lady beetles in nine habitats were determined on Arnold Air Force Base located on the Barrens Plateau near Tullahoma, Tennessee. This case study serves as an example of research conducted to assess and document biodiversity, illustrating the tremendous potential of exotic species to impact native populations. This study was conducted in burned and non-burned grasslands, forest wetlands, riparian forest, oak-dominated hardwood, managed pine, etc. Sixteen species of lady beetles were documented—three were exotic species. Interestingly, the two most commonly collected species were both exotics—*Harmonia axyridis* (Pallas) (37.3%) and *Coccinella septempunctata* L.(16.0%)—and represented 53.3% of all individuals collected. One of the most commonly occurring lady beetles in North America, the convergent lady beetle, *Hippodamia convergens* Guerin-Meneville, was found infrequently during this study, suggesting possible species displacement by exotic species. A few habitats supported several species of lady beetles. Because of the potential impact of introduced species on composition of native species, conservation management plans should be developed and implemented to enhance survival and proliferation of native species.

A Critical Network of Conservation Areas in the Southern Appalachians

Hugh Irwin, Susan Andrew, Glen Locasio, and Trent Bouts, Southern Appalachian Forest Coalition

The foundation for protection and recovery of the Southern Appalachian's biological diversity and ecological processes depends on landscape conservation areas centered on public ownership. The most critical of these lands are those that retain a high degree of their natural ecological functions. These areas provide the basis from which recovery and restoration can occur. These areas also furnish the best reference data to guide recovery of more damaged ecosystems. Areas with few or no roads, areas of old-growth forest, biological hot spots, and critical watersheds must be managed to ensure long-term protection of these natural values. These and other conservation lands form the key components of the Southern Appalachian Forest Coalition's conservation plan that will be depicted in the poster.

Great Smoky Mountains National Park: Preserving... Restoring... Removing

Carey Jones, Great Smoky Mountains National Park

The poster display will provide a general overview of Resource Management and Science activities in Great Smoky Mountains National Park. The images will be designed around the actions of preserving, restoring, and removing – which support the mission of the Park:

“...to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” (16 USC 1)

Recent publications will be available as giveaways, dealing with the conference subthemes of: information technology, invasive species, native plants, biodiversity, air quality, and environmental education. Also the role of archeology in resource management and science will be highlighted.

Diversity and Distribution of the Insect Fauna Associated with Yellow-Poplar in East Tennessee

John LaForest, P.L. Lambdin, J.F. Grant, The University of Tennessee Department of Entomology and Plant Pathology

The insects associated with yellow-poplar (*Liriodendron tulipifera* L.) and their distribution were assessed at two sites (plantation and mixed hardwood) in east Tennessee using three sampling methods: malaise trapping, canopy fogging, and direct sampling. Some 725 species representing 15 orders were identified. The lower canopy was 35% richer at the species level than the upper canopy. Only 13% of the families were unique to the upper canopy and there was an 80% overlap at the order level. The faunas differ at the species level with 60% of the species collected unique to the lower canopy and approximately 40% unique to the upper canopy. Some 452 specimens of Apoidea were collected in the lower canopy representing 20 species in five families, while only 36 specimens were obtained from the upper canopy representing nine species in two families. Also, 50% of the insect species collected at the plantation site consisted of Coleoptera, compared to only 30% of the insect species in the mixed hardwood forest site. The Coleoptera, Diptera and Hymenoptera taxa represented 90% of the fauna collected at both sites.

Propagation of Threatened Native Medicinals

Joe Ann McCoy, Clemson University/NC State

In recent years much attention has been focused on the loss of genetic diversity as it relates to potential plant medicines from tropical rain forests, with relatively little attention given to North American temperate regions. There subsequently exists a large void of accessible research on native North American medicinal plants. Recent expansion of the botanical medicines industry has created an increased pressure on these populations, thus creating a need for the conservation of particular ‘at risk’ species. Development of cultivation and propagation protocols can provide an alternative source of plant materials for this industry as well as new crop opportunities for area farmers.

The southeastern bioregion has a distinct research advantage for the development of propagation data concerning these species due to its flora diversity and temperate climate. A current research

project is focusing on three native species that are traditionally harvested for their roots and are at potential risk for future extirpation from native habitats. The project is not only focused on propagation research but also on the identification of active ingredients, analysis of raw materials, shelf-life testing, and the optimization of active ingredients. A specific goal is to encourage the production of threatened medicinal plants as profitable alternative crops to area farmers.

Attraction of Native Predators to the Sex Pheromones of *Matsucoccus* Spp. (Homoptera: Margarodidae) in Pine Dominated Forests of the Great Smoky Mountains National Park

J.D. Nelson, P.L. Lambdin, J.F. Grant, The University of Tennessee
Department of Entomology and Plant Pathology

A study was initiated in 1999 to assess the effectiveness of sex pheromones in attracting predators of *Matsucoccus* spp., and evaluate those predators as potential biological control agents for adelgid and scale insect pests of southern Appalachian forests. Sixty sticky traps equipped with rubber dispensers saturated with the pheromones were exposed at monthly intervals in mixed pine stands at six sites along an elevation gradient in the Great Smoky Mountains National Park and The University of Tennessee Arboretum. Collections of *Hemerobius stigma* Stephens and *Elatophilus inimica* Drake and Harris demonstrate a significant preference to the sex pheromone of *M. feytaudi* and were most abundant in stands of table mountain pine (*Pinus pungens* Lamb.) on dry, rocky ridges between 914m and 1392m. Collection of *E. inimica* represent a new state record and the most southern distribution for this species. Males of *Matsucoccus gallicolus* Morrison were collected in traps at 1000 to 1200 m. This may imply that the attraction of *H. stigma* and *E. inimica* to sex pheromones of *Matsucoccus* is based on the recognition of key chemical combinations. The capture of adult Hemerobiids and Anthocorids enhances the potential to use these predators in biological control programs against exotic adelgid and scale insect pests. Further biological control projects may benefit from the use of sex pheromone baited traps to identify potential predators and introduce them into forests threatened by *Matsucoccus* and other soft-bodied forest pests.

The Abundance of Gastropods in Forests with Different Land-Use Histories

Amy E. Panikowski, Scott M. Pearson, Mars Hill College Biology Department;
Norman Hicks, Museum of Natural History, University of Georgia

The abundance, spatial pattern, and disturbance history of forest community types can affect populations of native species. This study focuses on the abundance of gastropods captured in the mesic forests in Western North Carolina. The abundance of snail species was compared for forested sites having different land-use histories, and for sites located in small (<50 ha) versus large (>500 ha) patches of forest. We also tested for correlations between snail abundances and habitat characteristics such as levels of coarse woody debris and the characteristics of vegetation in the overstory, understory, and herb layers. We hypothesized that the highest abundances of gastropods would be at moist sites, sites with greater herb abundance, and sites with low land-use intensity.

The Legacy of Landscape Change in Forest Communities of the Southern Blue Ridge Mountains

Scott M. Pearson, Mars Hill College; M.G. Turner, University of Wisconsin;
A.B. Smith, Mars Hill College; P. Bolstad, University of Minnesota

Forest communities of the southern Blue Ridge Mountains show the impacts of past land uses. Maps of landscape change, compiled from remote imagery, show that forest cover has increased since 1950. Using topography and landform to predict forest types, we measured the change in abundance of forest types at 20 yr intervals. Cove hardwood communities were the most dynamic. The legacy of change has resulted in a mosaic of forest stands in which community composition varies with abiotic gradients, stand age, landscape context, and disturbance history. Field studies have been conducted to examine plant community composition with respect to: (a) new versus pre-existing forest stands, (b) small versus large forest patches, and (c) varying levels of anthropogenic disturbance. Resulting data show that plant life-history strategies are correlated with these factors. In particular, species with limited dispersal capability and specialized habitat requirements were less likely to be present in fragmented and disturbed stands. Generalist species were least sensitive to fragmentation and disturbance. Species with “weedy” life-histories were more abundant in new stands and in small forest fragments, but largely absent from large patches. Simulation modeling is being used to explore the interaction between landscape change and species with different life-history strategies.

The Effects of Controlled Burns, Herbicide and Native Seed Dispersal on Native and Non-Native Species in a Meadow Community in Cades Cove, Great Smoky Mountains National Park

Charles Price and Jake Weltzin, The University of Tennessee, Department of Ecology and Evolutionary Biology; Chris Fleming, The University of Tennessee, Department of Biology

Great Smoky Mountains National Park Managers, in attempts to reduce the abundance of non-native species, have initiated restoration efforts in sections of the historic Cades Cove Valley. Treatments have included prescribed burning, mowing, herbicide application and native seed dispersal. To determine the efficacy of their treatments we examined the frequency, cover and biomass of a collection of native and non-native species located within two experimental sites within the cove. Qualitative analysis indicates that a combination of early season burning and herbicide application is an effective regime for reducing the frequency and cover of non-native species. In addition, native seed dispersal significantly increased the frequency and cover of select native species. The treatments also appear to increase overall productivity.

Southern Appalachian Mountains Cooperative Ecosystem Studies Unit

Jack Ranney, CESU; The University of Tennessee, Forestry, Wildlife and Fisheries Department

The Southern Appalachian Mountains Cooperative Ecosystem Studies Unit or CESU was created in 1999 by four federal agencies (NPS, USGS, USFS, USDOE) partnering with 10 regional universities and organizations. The host institution is the Institute of Agriculture at The University of Tennessee. The CESU became operational in 2000. It is one of four units in the United States, each customized to meet regional needs. The Southern Appalachian Mountains CESU is designed to provide specific assistance in ecosystem and cultural sciences from universities and other sources that these federal agencies need within the region. This assistance occurs through federal staff training or fac-

ulty-federal staff team development for specific projects. It also occurs through collaborative planning and pursuit of outside funding of high priority areas to the federal resource managers.

The strengths of the CESU are speedy, low overhead availability of specialized faculty in the region; development of ideas, teams, and proposals for funding; collaborative strategizing in the pursuit of initiatives, and organization of customized professional training teams for federal resource managers.

The CESU has initiatives in the areas of threatened and endangered species restoration, evaluation and management of exotic pest invasions, and regional carbon dynamics (climate change). Specific teams are focusing on bear monitoring, fresh water mussels, evaluation of National Natural Landmarks, exotic pests and biodiversity along federal boundaries, and numerous cultural assessments.

SAMAB and the CESU have both similarities and differences. The two organizations are working closely to address similar southern Appalachian environmental challenges in different ways or roles. We are also assisting one another in areas such as web sites, databases, capability inventories, clarifying federal agency needs, and proposal development.

Little Tennessee Watershed Association

Sharon Taylor, Little Tennessee Watershed Association

The Little Tennessee Watershed Association, Inc. (LTWA) is a grassroots organization, established in 1994. The mission statement of the organization is “to work with public agencies, conservation interests, community groups, and public and private landowners to develop and implement a strategy for the conservation and improvement of the water quality and habitat of the Little Tennessee River and its tributaries above the Fontana Reservoir.” To accomplish this mission, the LTWA established an Advisory Board that includes representation from various local, state, and federal agencies, as well as conservation groups. The volunteer Board of Directors is diverse and includes persons from the community with science, business, and public relations backgrounds. The LTWA is involved in an extensive riparian restoration project, sediment monitoring project, and a biological monitoring project. Some of these projects rely heavily on volunteers. The organization also has an active education committee, dedicated to informing the public about methods of conservation and improvement of the waterways and riparian areas of the watershed. The LTWA has worked closely with local government officials, and the group was asked to help form a countywide watershed council to advise the county leaders on watershed related issues. Since its inception, the LTWA has chosen to work with private citizens and landowners, local government, various state and federal agencies, and other like-minded grassroots organizations towards the common goal of conservation and improvement of the Little Tennessee River watershed.

The Socioeconomic Significance of the Forest-Based Resources along the Southern Cumberland Plateau

Mark Tucker and Josiah Daniel, The University of the South

Forests play an integral role in the Cumberland Plateau Region of Tennessee both in terms of the economy and the residents' quality of life. This paper is an analysis of how forests in a seven-county region of the Plateau affect the economy and well being of the region's citizenry. This analysis combines published data, qualitative data obtained through interviews of key officials and residents along with GIS analysis of the region. The presentation examines the role of the forest and wood products industry in the changing economy of the region over the last twenty years and the other roles that forest has played, and may play in the future. Special attention is placed on spatial differences and trends within the region.

The changing land use practices and forest conversion in this region of the Cumberland Plateau make this analysis an extremely timely and relevant proposal for a poster to the issues currently of concern to SAMAB.

USDA – NRCS

Charles Roberts, NRCS

(no abstract available)

PLENARY SESSION

Wednesday, November 15, 2000
8:30 a.m. – 10:00 a.m.



Quentin Bass, Forest Archaeologist, Cherokee National Forest, U.S. Forest Service. “The Southern Appalachian Forest Ecosystem and the Effects of Land Use: 8000 BC to AD 2000.”

Ronald Eller, Professor, University of Kentucky; Appalachian Regional Commission's Appalachian Scholar. “Worlds Apart: The Separate World Views of Communities & Public Agencies in Appalachia.”

BIODIVERSITY, Part 2

Wednesday, November 15, 2000

10:15 a.m. – 11:10 a.m.

Session Chair: Bob Butler, US Fish and Wildlife Service



New Opportunities in Native Plants

Robin A. Suggs, Yellow Creek Botanical Institute

The Yellow Creek Botanical Institute is a 501(c)(3) nonprofit corporation based in Graham County, North Carolina. The Institute's primary focus is the advancement of plants native to the southern Appalachian region as a tool for sustainable economic development. With nearly 2,500 species of vascular plants, the Blue Ridge Bioregion is perhaps the most botanically diverse region outside of the tropical rainforests. Most of these species have never been developed commercially to any large degree.

As a region rich in botanical diversity, there exists considerable opportunity for the commercialization of many of the area's plant species as new foods, fibers and medicines. The Yellow Creek Botanical Institute has taken the lead as a regional organization devoted to the development of these new opportunities.

This area of Appalachia, historically plagued by high unemployment and poverty, has seen little of the economic prosperity enjoyed by the remainder of the nation during the rapid economic expansion of the 1990s. Loss of farmland for second home development and a marked decrease in air and water quality are all factors alluding to the area's dependence on non-sustainable business activities of the past.

The Institute, in collaboration with local government, the U.S. Forest Service, National Cancer Institute, Research Triangle Institute, NC State University, Clemson University and others, is working to analyze the current and future opportunities associated with the development of new markets for native plants. Through this unique collaborative effort it is hoped that some of the negative economic trends of the past can be reversed by gains made from the utilization and development of resources close to home.

Special Forest Products: Conservation Strategies for Sustainable Plant Collection on Southern Appalachian Forests

Wayne Owen, US Forest Service, Southern Region, National Forest System; Steve Simon, Larry Hayden, and Gary Kauffman, US Forest Service, National Forests in North Carolina

Recent data suggest collections of ginseng and other forest products may be at a level that threatens long-term survival in the Southern Appalachians. Collection pressures have increased on public lands. Collaborative management options have been underway by several agencies (NPS, state plant boards, and some units of the National Forest System), but we think a more comprehensive strategy is needed to inventory populations and monitor and evaluate collection pressures of this and related species in the region. We will discuss short-term efforts underway and some longer-term conservation measures under review.

Modeling for Rich Cove Forest Communities: A Treasure for Special Forest Products — A First Approximation

Steve Simon, USFS, National Forests in North Carolina; Henry McNab, USFS Southern Research Station, Bent Creek Experimental Forest; Chris Ulrey, NPS, Blue Ridge Parkway; and Gary Kauffman, USFS, National Forests in North Carolina

(no abstract available)

INVASIVE SPECIES

Wednesday, November 15, 2000

11:10 a.m. – 12:00 p.m.

Session Chair: Jack Ranney, University of Tennessee,
Energy, Environment and Resources Center



The State of Invasive Plant Knowledge and Control on Managed Lands of the Southern Appalachians

Dane Kuppinger, University of North Carolina-Chapel Hill; Jake Weltzin, University of Tennessee; Hilary Vinson, US Fish & Wildlife Service; Jack Ranney, University of Tennessee EERC; Robert S. Turner, SAMAB

While invasive plant species have begun to attract the attention of land managers, researchers, and government agencies, until now there has been no documentation as to the extent of the invasive species problem.

To this end, as part of its Invasive Pest Plant Initiative, the Southern Appalachian Man and Biosphere program initiated a survey of 41 state, federal, and non-governmental agencies to determine the extent of land manager's awareness of the problem and the degree to which control efforts have been undertaken. Results indicate that there is a great deal of variation in the depth and breadth of knowledge about plant invasions among agencies. Although some land managers have no knowledge as to the existence (or lack of) invasive plant populations, most have compiled lists of invasive species, and some have prioritized these for control, but few have population data, and control efforts have generally been limited. Although a total of 263 plant species were reported as invasive in the region, many managers identified a much smaller subset of species as highly invasive.

The survey also compiled a list of Southern Appalachian land managers and researchers working on invasive species as well as a list of resources and pertinent available information.

Bringing the Public into the Exotic Species Debate

Patrice Cole, The University of Tennessee, Department of Ecology and Evolutionary Biology

The terms invasive, exotic, weedy, and pest have been used to describe species that appear to dominate certain habitats and landscapes. Such species are typically non-indigenous to the affected natural systems, having been introduced intentionally or accidentally by humans or, less frequently, dispersing outside their range on their own. Several "exotic" species are suspected of displacing native species and/or changing ecosystem functions, such as nutrient cycling, in ways that are undesirable and may be irreversible. However, data to support such claims are largely unavailable. Economic impacts on agriculture and other human endeavors are better documented.

The ecological impact of non-native species has been a top priority for land managers and is a rapidly growing field of scientific research, yet the larger public is virtually unaware of the issue. Even within the scientific community, questions about the validity of ecological concerns and the appropriate focus of research and control efforts have recently begun to surface. How ecologically meaningful is the concept of “non-native?” Is there justification for eradicating a non-native species that does not appear to behave as a “pest?” Should native pests be any less of a management concern? Are there circumstances when the addition of a non-native species might be viewed as beneficial?

Clearly, the answers to such questions involve value judgments as well as scientific analysis. Even if the scientific community reaches a consensus on these issues, translating scientific insight and technical developments into public policy will necessarily require a great deal of public input and support. I will present a framework for communicating the complexities of species invasions and ecological impacts to the general public and suggest methods to gain public support for further research and policy implementation.

Invasive Plant Species along Highways: Bridging Private Practices and Natural Area Needs: “Where the Plants Meet the Road”

Jerome F. Grant and Paris L. Lambdin, University of Tennessee, Department of Entomology

A two-year study evaluated the incidence of exotic and invasive plant species along interstate systems in Tennessee. More than 500 plant species—of which 176 (about 1 of every 3) were exotics—were identified along roadways. Because highways may serve as a corridor for the establishment and spread of exotic species, private land owners and managers of natural areas must develop and align their practices with those of public agencies and vice versa. To better align private practices and natural area needs, public agencies must build a bridge to provide better communication, information and input to assist with long-term management programs for invasive species that benefit private land owners and natural areas.

IN SOUTHERN APPALACHIA, EVERY DAY IS GIS DAY

Wednesday, November 15, 2000

10:15 a.m. – 12:00 p.m.

Session Chair: Robert S. Turner, SAMAB



SAMAB'S Leadership in the Geospatial Revolution

Wolf Naegeli, The University of Tennessee, Systems Development Institute

The world is in the early stages of implementing new technologies that will have a profound impact on people's locational awareness and understanding of geography. Inexpensive pocket devices are becoming available that always "know" where you are, showing you a map of your surroundings, with detailed directions to any other location. This capability soon will be a standard feature of mobile phones and car dashboards. The application software on your computer will feature integrated tools that make it very easy to embed custom maps in the documents you create. These maps can be three-dimensional. Instead of viewing them from "straight above," which makes them difficult to comprehend for many people, you will be able to view them from "within." SAMAB's Internet map servers will feed these applications with regional environmental and ecological geospatial data that will allow you to visualize resource management and sustainability issues like never before and enable better informed development decisions at the regional, local, and personal levels.

This presentation will include a brief demonstration of the SAMAB-developed Southern Appalachian Regional Information System, of a palm-top map viewer/data collection device, and video clips of applications that are too resource intensive now, but will be miniaturized in a few years. The focus is on information technologies to advance regional and local sustainability and biodiversity preservation with ecosystem monitoring and mapping.

Geographic Information: A Strategic Resource for North Carolina

Tom Tribble, NC Center for Geographic Information & Analysis

The Center for Geographic Information & Analysis (CGIA) is the lead public agency for GIS in North Carolina. Located in the Office of the Governor, CGIA is a GIS service agency and serves as staff to the NC Geographic Information Coordinating Council (GICC). The GICC fosters cooperation among government agencies, universities and the private sector. Its mission is to improve the quality, access, cost-effectiveness and utility of North Carolina's geographic information and to promote geographic information as a strategic resource for the State. This presentation will describe these activities, focusing on the cooperation between state and local government.

Kentucky Pride

David Gardner, Big Sandy Area Development District

This presentation describes a Kentucky program known as PRIDE (Personal Responsibility in a Desirable Environment). The presentation illustrates the eight Kentucky Area Development Districts' (ADDs') planning project, which included collecting and placing in a GIS environment program activities, failing septic systems, straight pipes to streams, and other data layers. The ADDs also created PRIDE plans for individual counties. Particularly illustrated is how data works in a macro way—over forty counties in KY—and how it works at a micro level.

For more information on the PRIDE program go to <<http://www.kypride.org/>>. The slides of this presentation area available at <<http://www.bigsandy.org>> (follow link to EDA conference presentation).

Lunch-time Roundtables:



SAMAB/CESU INTERACTIONS

(lunch by registration)

Wednesday, November 15, 2000

12:00 p.m. – 1:30 p.m.

Organizers: Jack Ranney, CESU; Robb Turner, SAMAB

This roundtable will be an opportunity for conference participants to discuss what should be the relationship between SAMAB and the Southern Appalachian CESU. The discussion will be led by Robb Turner and Jack Ranney, directors of the two organizations.

SAMAB ENVIRONMENTAL COORDINATION COMMITTEE NEPA ROUNDTABLE

(lunch by registration)

Wednesday, November 15, 2000

12:00 p.m. – 1:30 p.m.

Chair: Harold M. Draper, Tennessee Valley Authority

In 1999 the Environmental Coordination Committee of SAMAB initiated a database of Environmental Assessments and Environmental Impact Statements completed by agencies in the region. Such documents are prepared for most federal policies, plans and actions as well as for many state and private actions which need federal permits or receive federal assistance. The status of this project will be discussed, and participants suggestions for improving the database will be sought. Also, roundtable participants involved in NEPA will discuss current issues in environmental impact assessment at their agency.

GRASSY BALD MANAGEMENT PANEL

Wednesday, November 15, 2000

1:30 p.m. – 5:00 p.m.

Session Chairs: Kristine Johnson, Great Smoky Mountains National Park; Judy Murray, Southern Appalachian Highlands Conservancy



Presentations by panel members will be followed by an open discussion of experience with various management techniques, with a goal of defining what balds management research is needed.

Rare Species and Bald Management on Roan Mountain, North Carolina and Tennessee

Nora Murdock, US Fish & Wildlife Service

Roan Mountain, a massif straddling the boarder between two states and two national forests, has long been known as an area of international significance in part because of its importance to a large number of rare and endangered species. Many of these plants and animals are dependent upon the open habitats provided by the grassy balds, and are threatened by the encroachment of invasive woody species that are now closing in these high meadows in the absence of disturbance.

In the early 1980s, several experiments in balds management were carried out by the U.S. Forest Service in cooperation with the U.S. Fish and Wildlife Service on Roan Mountain in the Cherokee and Pisgah National Forests of Tennessee and North Carolina, respectively. The effectiveness of prescribed fires at different seasons was contrasted with mowing at different times of the year. It was found in these experiments that the prescribed fires stimulated the major encroaching species (blackberry and firecherry). Mowing proved to be surprisingly effective at retarding the growth and vigor of the same species, even when only applied once or twice during a growing season.

A Role for the Public in Bald Management

Paul Bradley, US Forest Service, Pisgah National Forest

I will address community involvement in defining management of publicly owned balds, and involving the public in executing management decisions. The Appalachian Ranger District is involved in managing more than two dozen balds and open areas along the North Carolina/Tennessee border, including over 2,250 acres of high elevation balds in the Roan Mountain area. A variety of management tools are being used, including hand mowing, mechanical mowing, grazing, prescribed burning and limited use of herbicides. Volunteers, nonprofit organizations, youth corrections programs, multiple governmental agencies and private contractors (some paying to allow them to harvest hay and graze livestock) are used to accomplish management objectives.

The Critical Role of Animals in the Origin and Management of the Southern Appalachian Grassy Balds

Peter Weigl, Wake Forest University, Zoology Department; and T.W. Knowles, Francis Marion University, Department of Biology

The origin and persistence of the high elevation grass balds of the southern Appalachians have been the subject of a long standing controversy that now threatens the preservation of this community, with its unique array of plants and animals. Those who claim that the balds are the result of recent, anthropogenic factors are content to allow successional processes to obliterate most balds. On the other hand, those who believe that balds are, in many cases, natural and quite ancient communities argue for their study and preservation. On the basis of information drawn from regional history, community ecology, agricultural studies and paleontology, we hypothesize that open grasslands probably always existed locally in mountain landscapes and elsewhere in the Southeast during the Pleistocene and that these areas were maintained and modified initially by large keystone herbivores, later by bison, elk and deer and, since about 1840, by domestic livestock. The rapid decline of the grass balds today may be largely attributed to the absence of large herbivores, and the best method for restoring them and conserving their rare biota may involve the reintroduction of wild or domestic animals in the future.

Grassy Balds Management on the Mount Rogers National Recreation Area: Where We Have Been, Where We Are, and Where We Are Going

Tom Blevins, US Forest Service, Mount Rogers NRA

This presentation discusses the management of both “natural” and man-made balds on the Mount Rogers NRA. It explores management techniques, noting what has and has not worked. The effects of the past 20 years of management will be discussed in light of knowledge that we are losing our balds at an ever-increasing rate.

Grassy Bald Management: The ATC Perspective

Ben Lawhon and Morgan Sommerville, Appalachian Trail Conference

Balds management is a priority for the Appalachian Trail Conference (ATC) as our volunteers work to fulfill the purpose of the Appalachian National Scenic Trail (A.T.) as defined by the National Trails System Act: “the conservation and enjoyment of the nationally significant scenic, historic, natural or cultural qualities of the areas through which [the A.T.] may pass.” The A.T. is managed through a public/private partnership spanning 75 years, allowing an historic overview of balds management from ATC’s perspective.

Management of Two Grassy Balds in Great Smoky Mountains National Park

Kristine Johnson and Jennifer Beeler, Great Smoky Mountains National Park

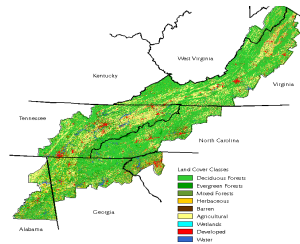
Great Smoky Mountains National Park initiated active management of Gregory and Andrews Balds in 1983, following the completion of the Park's General Management Plan mandating restoration of the balds for their scenic and ecological values. Several rare plant communities are found on the balds, and both balds are popular hiking destinations. Oral histories and old photographs provided guidelines for target perimeters, and over the years a wide variety of tools and methods have been employed. At present both balds are close to their 1930 size, and native plant communities are doing well. Current problems include the invasion of non-native grasses and persistent blackberry sprouting from old brush piles.

A MAP IS WORTH A THOUSAND PICTURES: IMPROVING COMMUNICATION AND DECISION MAKING WITH GIS

Wednesday, November 15, 2000

1:30 p.m. – 3:00 p.m.

Session Chair: Wolf Naegeli, The University of Tennessee, Systems
Development Institute



Visual Sensitivity Mapping of the Blue Ridge Parkway: Conservation Planning and Land Analysis

James (Jay) D. Tomlinson, Design Research Laboratory School of Design,
North Carolina State University

In 1994, the Blue Ridge Parkway Division, National Park Service, and the Design Research Laboratory at North Carolina State University, entered into a cooperative agreement to develop mapping for visually sensitive lands adjacent to the Blue Ridge Parkway, and to examine the logistics of a comprehensive visual sensitivity mapping program. The information provided by such a program, while previously unavailable through any means, is essential to both the short-term and long-term visual resource management strategies, and ultimately to the esthetic and economic viability of the Parkway itself. While land development activities and consequent scenic degradation have increased dramatically in the Southern Appalachians, the means for protecting public interests in this uniquely scenic region have not, and the preservation of scenic quality has become a largely defensive effort responding to an escalating series of crises. The broad goal of this research initiative was to develop an information framework that would help mitigate this situation by allowing public agencies, private landholders, local communities, and regional land trusts to share a common understanding of their critical scenic resources. A more specific goal was to provide essential information for the staff of the Blue Ridge Parkway Division of the National Park Service.

The most essential component of a useful information framework is a set of visual sensitivity maps. These maps not only identify which lands are visible from the Blue Ridge Parkway but also evaluate varying degrees of visual sensitivity, or potential visual impact. This could only be achieved through the development of new mapping approaches. Approaches based on direct observation or manual viewshed mapping techniques are time-consuming and expensive, of questionable accuracy, and limited to individual viewpoints or very small sets of viewpoints. This presentation describes the approach of combining three-dimensional digital landscape models, computer simulations of multiple

viewpoints along the Parkway, and advanced cartographic visualization techniques.

Identifying Recent Surface Mining Activities in Appalachia

Karen Burhenn, The University of Tennessee, Department of Ecology & Evolutionary Biology

Surface mining activities can effect numerous ecosystem processes. Mining activities can lead to water pollution, destruction of natural habitats, and soil destabilization through the alteration of the landscape and hydrologic cycles. As part of an Environmental Impact Statement, satellite imagery analysis will be used to identify temporal changes in surface mining activities between the early 1990s and 1999 in the southern Appalachians. Normalized Difference Vegetation Indices (NDVI) will be calculated for all images within the study area. Changes in NDVI between time periods will be compared with mining sites identified in the early 1990's Multi-Resolution Land Cover (MRLC). The identification of surface mining changes will support further projects analyzing relationships between surface mining activities and various environmental indicators.

Forest Service Inventory and Monitoring Program

David Meriwether and Wayne Owen, USDA Forest Service, Southern Region

USDA Forest Service is revamping its Inventory and Monitoring Program so that it meets current agency and interagency needs. Numerous issues have driven the agency to adjust its programs from top to bottom. Concerns about species viability, water use and watershed conditions, and forest health and sustainability are drivers for change. In addition, Forest Service databases and inventories, that have been designed primary to meet local needs of individual forests or regions, now need to provide information on resource and ecosystem conditions at other levels. The presentation will cover the Forest Service Inventory and Monitoring Framework, Action Plan and give examples of data systems being developed and implemented agency-wide. Interagency partnerships involved and implications to future cooperative efforts will be discussed.

A Methodology for Natural Resource Analysis Appropriate for County Level Planning

Jeff Pfitzer, Chattanooga-Hamilton County Regional Planning Agency

The 11th annual SAMAB Fall Conference has a mission to identify and begin to clarify challenges, solutions, and projects on the subject of empowering communities through public agencies. A methodology that works toward this mission was developed during a program of study at the University of Tennessee School of Planning. This presentation describes this methodology—for developing an integrated cumulative analysis of sensitive natural resources to analyze natural resources-waterways, wetlands, forested lands, prime agricultural soils, and steep slopes-and to demonstrate the cumulative sensitivity of the natural resources in a given area. The methodology is designed to require a minimum of technical and financial resources. The basic purpose for this methodology is to educate and empower local decision-makers to make more informed and sustainable land use decisions.

The case study for this study reveals that much development does, in fact, occur in sensitive natural areas. GIS-based analysis and demonstration of current land use practices could be well utilized by planners to inform the public and to assist in the development of policy aimed toward the protection of sensitive areas from activities that would reduce their capacity to serve their natural functions. The case study also highlights the need for regional data repositories such as the Southern Appalachian Regional Information System (SARIS) that can make available historic and current data for analytical applications.

ENVIRONMENTAL EDUCATION

Wednesday, November 15, 2000

3:30 p.m. – 5:30 p.m.

**Session Chair: Libby Wilcox, North Carolina Department of
Environment and Natural Resources**



The Interface Between Public Agencies and Communities' Environmental Education: Connecting Communities to Their Natural Heritage

Al Fritsch, Appalachia-Science in the Public Interest

Appalachia-Science in the Public Interest (ASPI) Nature Center's Mission: To celebrate and furnish information about all the flora and fauna of the precious and fragile Central Appalachian ecosystem.

The Nature Center has been established to nurture the spirit of Appalachian people by showing that our region's environment is a priceless treasure that should not be damaged or destroyed. Over time, Appalachians have been taught that Appalachia has little of value, other than coal, timber and other raw materials. We at ASPI hold that Appalachia has immense natural resources as seen in the variety and abundance of plants and animals in our region and our goal is to serve as a living demonstration of that wealth of resources.

ASPI's mission has always included education in environmental health and in appropriate technology for the maintenance of a healthy environment. Our special emphasis is the education of the young of Appalachia, resulting in their understanding and appreciation of our natural heritage.

Georgia's Wildlife Education Initiative

Anthony Rabern, GA Department of Natural Resources

The mission of the Wildlife Resources Division (WRD) of the Georgia Department of Natural Resources is to promote the conservation and wise use of Georgia's natural resources. Education is an important means to accomplishing this mission. To this end, a wildlife and environmental education initiative was implemented in 1996. The educational mission of WRD is to cultivate an appreciation and understanding of Georgia's wildlife resources so as to foster wise stewardship of these resources and to promote safe and ethical natural-resource based recreation.

WRD staff members identified the development of regional wildlife education centers as the most effective means of reaching the Division's education goals. To date, the WRD supports six centers across the state: Armuchee (NW Georgia), Smithgall Woods (NE Georgia), McDuffie (E Georgia), Grand Bay (SE Georgia), Sapelo Island (Coast), and Charlie Elliott (Middle Georgia). These centers are located on various state-managed facilities including Wildlife Management Areas, Public Fishing Areas, and state conservation areas. Four of the six centers were formed as a partnership between the WRD and local school systems.

Providing high quality wildlife education in a natural setting using interdisciplinary, hands-on approaches is the strength of our programming philosophy. Programs focus on concepts related to terrestrial and aquatic habitats, interrelationships between habitat and wildlife, and general wildlife and fisheries studies relating to observation, identification, and classification. Most classes are grounded in Project WILD, Project Learning Tree, and Adopt-a-Stream curricula and meet the State Board of Education's core curriculum objectives. The REC concept has been well received by public educators and usage at most facilities has reached maximum sustainable capacities given existing staff, funding, and resources.

Teaching Botany As If It Mattered

Ina Warren, Bartram Trail Society Board of Directors

This illustrated talk will present ways that Jr./Sr. High School educators can enhance their science curricula teaching stewardship and conservation of plant diversity. Topics to be covered will be:

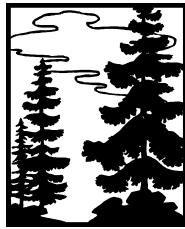
- an overview of current pharmacological research of medicinal plants,
- the importance of protecting plant diversity both on a global and local scale, and
- a bit of history of medicinal plants in our Southern Appalachians.

OPTIONS FOR IMPROVING AIR QUALITY

Thursday, November 16, 2000

8:30 a.m. – 12:00 p.m.

**Session Chairs: Paul Muller, North Carolina Department of
Environment and Natural Resources, Asheville Regional Office,
Division of Air Quality;
John Sheffield, Joint Institute for Energy and Environment, ORNL**



A variety of efforts are currently underway in the Southern Appalachian area to address air quality issues. These efforts include state implementation plans to comply with the NO_x SIP call, new laws requiring clean gasoline, regional efforts such as the Southern Appalachians Mountains Initiative, and a number of initiatives exploring transportation improvements. This session begins with a panel discussion that focuses on the status of current developments as well as looking towards future possibilities for improving the air quality in the Southern Appalachians. The second part of the session includes presentations focusing on energy and transportation options.

Panel participants:

Alan D. Jones
Administrator, Transportation & Smart Growth
Tennessee Department of Environment & Conservation

Gary Harris
Manager, TVA Green Power Switch Program

Paul Muller (moderator)
Asheville Regional Supervisor; North Carolina Division of Air Quality

Kay Prince
US EPA Region 4

Andrew Goldberg
North Carolina Mountain Air Quality Coalition

Michael Shore
Southeast Air Quality Manager, Environmental Defense

Green Power Switch

Gary H. Harris, Tennessee Valley Authority Green Power Switch Program

What makes green power green? Renewability. Resources like wind, solar power, and landfill gas produce energy for today and renew themselves for tomorrow-like a growing plant. The environmental effects of traditional energy sources like coal, natural gas, oil, and nuclear power can be significant. Although no source of energy is impact-free, renewable resources create less waste and pollution. TVA and 12 local public power companies, working with input from the environmental community, are producing electricity from these cleaner, greener resources and adding it to the Tennessee Valley's power mix. The Green Power Switch market test began on April 22, 2000, and TVA expects to expand the program over the next two years and make it available Valleywide by 2003. Green Power Switch will provide enough electricity to supply 150 kilowatt-hours a month for about 30,000 Tennessee Valley homes, plus an ample supply of energy for participating businesses and industries.

Regional Transportation Alternatives Plan for East Tennessee

Jeff Welch, Director, Knoxville Urban Area Metropolitan Planning Organization

The Regional Transportation Alternatives Committee, coordinated by the Knoxville Urban Area Metropolitan Planning Organization, is preparing a Regional Transportation Alternatives Plan for 10 counties in East Tennessee. This study will investigate alternatives to highway-oriented plans. East Tennessee, including The Great Smoky Mountains National Park, requires a multimodal transportation system to serve its future needs.

This is a long range plan with a primary focus on the year 2030 but will also identify interim transportation alternatives. The study will identify a tool box of implementation strategies to support the feasibility of alternative transportation modes that are recommended in the study. The study should be complete by July 2001.

Some Transportation Recommendations for Western North Carolina

Linda Giltz, Regional Land Use and Transportation Planner, Land-of-Sky Regional Council

Land-of-Sky Regional Council is coordinating a project that is focused on providing more transportation choices to people in the five-county region surrounding Asheville, in western NC. This project is bringing together local governments, businesses, interested citizens, and other community, regional and state organizations to plan for more transportation connections between places and transportation modes in the region. Technical and Policy Advisory Committees, representing these diverse interests, have been meeting once a month, since January, 2000, to identify issues, needs, barriers and markets and to develop ideas on how to provide more choices and more connectivity in the region.

We are now beginning to develop a set of recommendations for new/expanded services, education and marketing initiatives and policy and funding changes. These recommendations and subsequent action plans will hopefully lead us to implementing some things in the near future and some further planning and coordination among transportation providers for the longer term solutions and services.

This presentation will give a brief overview of the project scope and process and then explain the recommendations that are being developed.

Electric and Hybrid-Electric Buses—The Real Scoop

Carla Thomure, Electric Transit Vehicle Institute

The Electric Transit Vehicle Institute (ETVI) is a non-profit institute based in Chattanooga, Tennessee. Drawing on eight years experience in working with transit operators across the country evaluating proposed and existing alternative fuel transit vehicles, particularly electric and hybrid-electric buses, ETVI has gathered general information regarding the operation and performance of electric and hybrid-electric in a variety of transit applications.

Through two completed Technology Transfer projects funded by the Tennessee Department of Transportation, ETVI has had numerous opportunities over the past four years to demonstrate both electric and hybrid-electric buses in the Gateway area of Sevier County and The Great Smoky Mountains National Park. Air quality issues as well as tremendous traffic congestion plague many cities across the country, including the cities of Sevierville, Gatlinburg and Pigeon Forge. The Great Smoky Mountains National Park suffers along with the neighboring cities as well as the plant and wildlife. The utilization of electric and hybrid-electric buses has relieved these problems in other cities and can benefit the area surrounding The Great Smoky Mountains National Park, both in Tennessee and North Carolina.

This presentation will provide “The Real Scoop” regarding electric and hybrid-electric buses as well as offer some general comparative information to traditional diesel buses.

DIRECTIONS FOR WATERSHED MANAGEMENT IN THE SOUTHERN APPALACHIANS

Thursday, November 16, 2000

8:30 a.m. – 12:00 p.m.

Session Chair: Jerry Ryan, US Geological Survey



Conserving Aquatic Biota on Southern National Forests

Kelly M. Russell, USDA Forest Service, Southern Region, Regional Fisheries Program

Southern aquatic biota are some of the most diverse and “at risk” in North America. The southern region of the Forest Service harbors substantial opportunities to provide high quality habitat and secure populations for many of these species. In order to guide planning and prioritize investments for protection and restoration, the Southern Region has completed an assessment evaluating the aquatic habitat and fauna of sub-basins within the region. The presentation will review results of the assessment and discuss practical applications of the results.

Little Tennessee Watershed Association

Sharon Taylor, Little Tennessee Watershed Association

The Little Tennessee Watershed Association, Inc. (LTWA) is a grassroots organization, established in 1994. The mission statement of the organization is “to work with public agencies, conservation interests, community groups, and public and private landowners to develop and implement a strategy for the conservation and improvement of the water quality and habitat of the Little Tennessee River and its tributaries above the Fontana Reservoir.” To accomplish this mission, the LTWA established an Advisory Board that includes representation from various local, state, and federal agencies, as well as conservation groups. The volunteer Board of Directors is diverse and includes persons from the community with science, business, and public relations backgrounds. The LTWA is involved in an extensive riparian restoration project, sediment monitoring project, and a biological monitoring project. Some of these projects rely heavily on volunteers. The organization also has an active education committee, dedicated to informing the public about methods of conservation and improvement of the waterways and riparian areas of the watershed. The LTWA has worked closely with local government officials, and the group was asked to help form a countywide watershed council to advise the county leaders on watershed related issues. Since its inception, the LTWA has chosen to work with private citizens and landowners, local government, various state and federal agencies, and other like-minded grassroots organizations towards the common goal of conservation and improvement of the Little Tennessee River watershed.

Stewardship of the Clinch-Powell Watershed

Tere McDonough, Tennessee Valley Authority, Clinch-Powell Watershed Team

This presentation will trace the evolution of TVA's watershed improvement strategy from the 1990's to the present in the biologically diverse Clinch-Powell watershed. It will address the initial steps taken by the Clean Water Initiative River Action Team to assess resource conditions and determine the level of local interest in improving watershed health. Information will be provided about the current sustainable watershed emphasis of the Clinch-Powell Watershed Team, which was formed in 1999 to integrate watershed improvement and public land stewardship functions. Efforts to build local watershed coalitions will be summarized, and successful coalition-driven watershed improvement projects will be highlighted. In addition, the presentation will explore how TVA is leveraging its public lands to enhance public awareness of watershed conditions and promote adoption of sustainable watershed management practices. The presentation will conclude with a discussion of lessons learned and future challenges.

Costs and Benefits of Riparian Restoration in the Little Tennessee River Watershed

Thomas Holmes, USDA Forest Service, Southern Research Station; Susan Kask, Western Carolina University, Department of Economics; John Bergstrom and Eric Huszar, University of Georgia, Department of Agricultural and Applied Economics; and Fritz Orr III, Western Carolina University, Department of Economics

Sediment, nutrients and toxic chemicals flowing from agricultural fields, timber harvesting sites, construction sites and other urban and rural areas threaten the biological integrity of streams and rivers and impact human uses. Riparian ecosystem protection and restoration is one strategy that can help prevent degradation of surface water quality. Investments in protection and restoration of riparian zone vegetation and structure can be costly and place a financial burden on private landowners. From society's perspective, riparian ecosystem investments should be made if the social benefits exceed the costs.

This paper presents preliminary analysis of the costs and benefits of riparian restoration and protection activities for the upper Little Tennessee River watershed in western North Carolina. Cost estimates are gathered from field data for restored sites. Benefit estimates are derived from a recent computerized survey of Macon County residents regarding their willingness to pay for different levels of riparian restoration and protection.

Conasauga River Alliance Watershed Project – USDA Forest Service Integration Into This Ongoing Public/Private Initiative

Kent Evans, USDA Forest Service Southern Region, Conasauga River Coordinator, Cherokee and
Chattahoochee National Forests

In 1995, USDA conducted a study to consider ways that private land owners could work effectively together to restore degraded portions of the Conasauga River watershed. This study led to the creation of the Conasauga River Alliance, a citizen led group that works with private organizations and government agencies in restoration of the watershed. The Limestone Valley RC&D and The Nature Conservancy played the primary roles in helping the Conasauga River Alliance get started as a citizen led organization. Since 1995, the Forest Supervisors of the Cherokee and Chattahoochee National Forest collaborated in their management of the upper watershed with the Alliance through their staffs and the two District Rangers. In 1997, the Forest Supervisors decided to do an assessment of the ecosystem in the upper watershed. This two-year effort utilized resource specialists from both National Forests. In April, 1999, the supervisors filled a full-time Coordinator position to handle Conasauga River issues for the two National Forests with a goal of seamless watershed stewardship across forest and district boundaries. The Forest Service developed an ecosystem management work proposal in the watershed that included input from the Alliance. The forests proposed that the Chief consider this Conasauga River Watershed Project to receive special funding and emphasis. The Chief selected the Conasauga River as one of 12 national priority watersheds in November 1999. One first-year task was to develop a business plan that described the business of watershed restoration in the watershed. The plan was written by the Alliance, the Forest Service, Georgia Forest Watch, Pacific Rivers Council, EPA, and others. The plan helped to shape Forest Service priorities, such as starting new initiatives in the watershed with Coweeta and Bent Creek Research Laboratories and the assessment and rehabilitation of sediment contributors on the National Forest. The Forest Service is assisting the Alliance with joint projects such as conservation education field days, interpretive materials and teacher workshops.

Update on the US Forest Service Chattooga Restoration Demonstration Project

Randy Fowler, US Forest Service

(no abstract available)



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