

# FOREST VEGETATION MANAGEMENT TOOLS

*for  
Natural  
Resource  
Professionals*

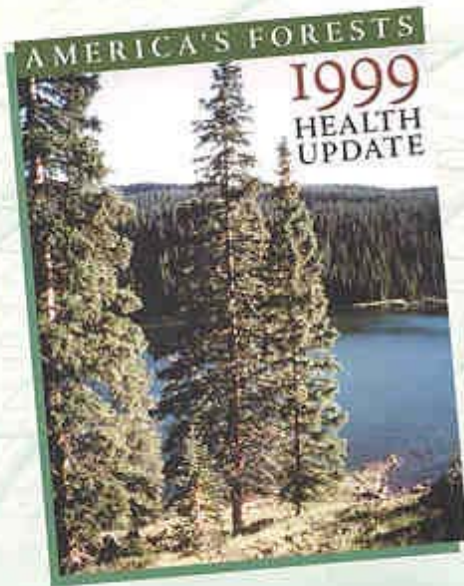


United States Department of Agriculture



Forest Service

# FOREST VEGETATION MANAGEMENT TOOLS



## Addressing Forest Ecosystem Health Concerns

As forest conditions change, natural resource professionals need to respond with appropriate management practices. Forest managers work with a variety of vegetation management techniques or "tools" in efforts to restore many unhealthy forest conditions.

As emphasized in the USDA Forest Service report "America's Forests: 1999 Health Update," vegetation management plays an important role in restoring and maintaining forest ecosystem health. This report lists seven forest ecosystem health concerns, five of which require that vegetation treatments be administered to improve forest health conditions—

- Forest wildfire threat
- Invasion of exotic pests
- Wildland/urban interface
- Loss of biodiversity
- Changed ecological conditions

*Forests have been changing....*

*Management needs have been changing....*

*Natural resource professionals can use these tools to find solutions for*



THIS PHOTOPOINT SERIES ILLUSTRATES

# TOOLS FOR NATURAL RESOURCE PROFESSIONALS

Forest ecosystems health is one of the primary components of sustainable forest management. As described in the USDA Forest Service Natural Resource Agenda, "Sustainable forest management is a key strategy in fulfilling our mission of caring for the land and serving people." In order to restore many forest ecosystems to a healthy condition, the innovative and dedicated use of forest vegetation management tools is essential.

## What Are Forest Vegetation Management Tools?

There are many tools that can assist in implementing forest vegetation management projects, from project-planning activities to the on-the-ground techniques. These tools have been organized into five categories covering a wide spectrum of resources.

The categories include:

- Knowing Forest Conditions
- Planning
- Community Collaboration
- Business Applications
- Treatment Techniques

## Who Will Use These Tools?

The tools are for natural resource professionals who use vegetation management strategies to achieve forest health objectives. Their titles may range from district rangers, to wildlife biologists, recreation planners, landscape architects, fisheries biologists, special forest products program managers, and fire resource team leaders.

## The Forest Vegetation Management Tools Website

Detailed information about the tools presented in this brochure is available on the Forest Vegetation Management Tools website. This site serves as a clearinghouse, providing:

- Information about familiar and innovative forest vegetation management tools
- Case studies of projects being implemented in the field that restore and maintain forest health
- Access to project contacts, website links, reports, and research data

The website can be found at:

<http://www.fs.fed.us/vegtools>

*changing management needs.*



F O R E S T   C H A N G E ... 1 9 0 8   T H R O U G H   1 9 9 8

## KNOWING THE FOREST CONDITION

Knowledge of past and present forest conditions and scientific predictions of future trends provides the foundation for forest vegetation management planning. Tools that can help develop and document this knowledge include remote sensing, ground plots, photopoints, computer modeling, and forest condition reports. New technologies and methods of applying existing technologies are continuously being developed.

### Remote Sensing

Aerial photography and other remote sensing techniques, such as digital sketchmapping, provide cost-effective methods of collecting resource conditions information over large areas.



Aerial Photography



Forest Vegetation Simulator

### Computer Modeling

Computer models can provide resource professionals with estimates on how forest conditions might change. The *Forest Vegetation Simulator (FVS)* is a model that takes existing forest data and estimates how the stand will change over time through natural processes or vegetation treatments. The *Stand Visualization System (SVS)* then produces a graphic simulation of the future landscape.

## PLANNING

National strategies, priorities, plans, and reports (such as the *Fire Cohesive Strategy*, *National Insect and Disease Risk Maps*, the annual *America's Forests: Health Update*, the *Natural Resources Agenda*, and landscape assessments and forest plans) provide guidance for selecting and prioritizing vegetation management projects. A wide array of analytical tools can then be applied to provide a strong scientific basis to the project plans.

### National Reports

Maps depicting areas at significant risk to disease or insects are created with GIS tools from data provided by local units and can help determine where attention may be needed to address these national forest health issues.



Insect and Disease Risk Map

### Analytical Planning Tools

Data visualization is a planning tool that allows us to "see" how the forest might look after vegetation management treatment. Specialized software is used to alter an actual photograph to simulate the expected forest condition after treatments.



Simulation Using Data Visualization

# COMMUNITY COLLABORATIONS

*Community involvement is an increasingly important aspect of successful programs. Forest managers need to include local governments and diverse groups when developing forest vegetation management projects that will also meet community needs. Tools supporting collaborative efforts include community-based partnerships, the Economic Action Program, landscape architecture, and public education programs.*

## Community-Based Partnerships

The Dolores Ranger District, Montezuma County Commissioners, and the Colorado Timber Industry Association facilitated the successful development of this partnership with other Federal agencies, the local public, and environmental groups. *The Ponderosa Pine Partnership* addresses issues facing southwest Colorado and works to restore landscapes through collaborative stewardship.



*Ponderosa Pine Partnership*

## Economic Action Program

Envisioned by western State foresters, *The Four Corners Sustainable Forestry Partnership* uses the Economic Action Program to encourage forest restoration on private, State, and Federal land in Arizona, Colorado, New Mexico, and Utah. Partnership programs address economic and environmental concerns through demonstration projects, workshops, regional information-sharing efforts, and project funding.



*Four Corners Sustainable Forestry Partnership Restored Forest*

## Landscape Architecture

Through the use of landscape architecture, social ecology principles, and community participation, treatment solutions were developed and successfully completed within a scenic byway corridor affected by pine beetle mortality.



*Before and After Treatments of Santiam Highway Corridor*

## Public Education

The *Field Ranger Program* promotes public support of Forest Service vegetation management practices. Field rangers are non-Forest Service employees, have diverse backgrounds, and participate in an extensive training program sponsored by the Forest Service to prepare them to discuss vegetation management issues with other members of the public.



*Field Ranger Program*

## BUSINESS APPLICATIONS

Existing and new business strategies increase the ability of forest managers to implement forest vegetation management projects. Business strategies available to the Forest Service include spending authorities (such as Large Scale Watershed Restoration Projects and the Wyden amendment), new contracting authorities (such as Stewardship Pilots), many options available under existing contract authority, and new market and marketing options being developed.

### Spending Authority

The USDA Forest Service and partners have provided funding for large-scale watershed restoration projects—total funding for FY 2000 was \$36 million. The projects demonstrate diversity in scope, location, discipline, and partnerships. Improving the health of forested areas in a watershed can reduce risks of flooding, insects, disease, and wildfire.



Upper Snake Plateau, CO,  
Watershed Restoration  
Project

### Existing Contracting Authority

Current contracting authorities are used to implement innovative stewardship projects on national forest land. In one type of stewardship agreement, contractors are compensated for number of acres treated and the Forest Service is paid for wood products removed. Benefits include reducing the fuel load and improving overall forest health.



Hungry Creek  
Stewardship Project

### New Contracting Authority

The FY 1999 Omnibus Consolidated Appropriations Act gives the Forest Service the authority to test new procedures for achieving stewardship objectives. One new authority is the exchange of goods for services, which the Six Rivers National Forest used to reduce wildfire risk and enhance oak woodlands.



Pilot Creek Stewardship  
End-Result Contracting  
Demonstration Project

### Market Options

In efforts to decrease fuel loads in high fire-risk stands, small-log handlers in central Oregon were surveyed to determine the viability of expanded use of small wood and to determine how to efficiently manage this resource. The survey showed that there was sufficient demand and capacity to increase small-diameter tree harvests.



Small-Diameter  
Wood Harvest

# TREATMENT TECHNIQUES

*Traditional and innovative vegetative treatments can restore forests to healthy conditions, which can reduce the risk of catastrophic wildfire and mitigate the effects of pathogens, insects, and invasive plants. Treatment tools include tree thinning, planting resistant species, pesticide technology (including biopesticides), prescribed fire, and commercial harvests designed to restore forest health.*

## Harvesting for Restoration

A shift in tree species and size, from large ponderosa pine to small Douglas-fir and white fir was changing the old-growth character of a popular campground. The successful thinning to remove the Douglas-fir and white fir species increased light, nutrients, and pest resistance for the pines and improved the aesthetic qualities of the campground.



*Cactus Lake Campground Thinning*

## Tree Improvements

The Forest Service Resistance Screening Center (RSC) is a valuable tool for tree improvement researchers, scientists, and industry. RSC evaluates seedlings for resistance to invasive and native tree diseases; nearly 13,000 seedlots and over 1.5 million seedlings have been evaluated since 1973.



*Resistance Screening Center*

## Prescribed Fire

Following years of effective fire suppression and exclusion, the native ecosystem in the Ouachita National Forest had virtually disappeared—causing habitat loss for several species. Through application of prescribed fire and other treatment techniques, the original shortleaf pine forests are being restored—providing critical habitat for the endangered red-cockaded woodpecker and other wildlife species.



*Ouachita National Forest Native Ecosystem Restoration*

## Pesticide Technology

Through a cooperative effort, a sporaX applicator that attaches to a feller-buncher was developed as a root disease prevention system. Application of the pesticide occurs at time of harvest and significantly reduces the spread of annosum root rot while reducing the expense and labor needs of traditional methods.



*Feller-buncher With Root Rot Treatment*

## GETTING RESULTS

*Drawing upon accumulated wisdom and experiences, natural resource managers are creating innovative solutions for today's forest vegetation management needs. These innovations can lead the way for future projects and are often recognized in national awards.*

### **Camino Real-Truchas Reinvention Pilot Project**

This project was a collaboration between the USDA Forest Service, non-governmental organizations, and Tribal entities to restore forests to healthy conditions and support local economic activities. The Camino Real Ranger District was recognized for collaborative efforts and received the National Performance Review's Hammer Award and the Ford Foundation's Innovations in American Government Award.



*Before and After Thinning on  
Camino Real-Truchas Reinvention Pilot Project*

### **Deschutes Conservation Camp**

As an alternative to higher-cost contract crews, a partnership with Oregon Department of Corrections was successful in accomplishing vegetation management treatments. This project received a State of Oregon Governor's Appreciation Proclamation in 1999.



*Deschutes Conservation  
Camp*

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FS-690  
November 2000

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