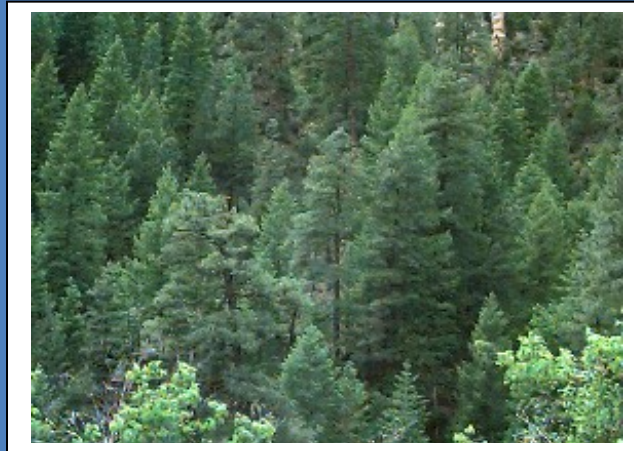


# Upper San Juan Mixed-Conifer Working Group Report July 2012



This report presents the work of the  
*Upper San Juan Mixed-Conifer Working Group* including  
findings and recommendations. The report also offers  
information on the forest type known as “mixed-conifer”.

Please visit the Web site:

(<http://ocs.fortlewis.edu/mixedconifer/>)



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Warm-Dry Mixed Conifer

Cool-Moist Mixed Conifer

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Please accept apologies for omissions or errors.

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*Project Assistant*  
*Web Master*

*The Working Group would like to thank the National Forest Foundation, the Pagosa Ranger District (USFS), Fort Lewis College, and the San Juan RC&D for funding, in-kind assistance and support.*

**Writing and research contributors** for this report include:

- Dr. Sam Burns, retired Fort Lewis College
- Steve Hartvigsen, Pagosa Ranger District
- Marsha Porter-Norton, consultant and facilitator and
- Thurman Wilson, retired USFS

Thanks to the Working Group Members for their careful review and comment.

**Picture credits:** Pagosa Ranger District; Steve Hartvigsen; Colorado Forest Restoration Institute (CFRI) report; and Google.

“The Upper San Juan Mixed-Conifer Working Group is a diverse cross section of people interested in public lands. This group’s desire to openly share and learn from one another as well as support possible solutions is extraordinary. The fact that they want to be problem solvers rather than just problem identifiers is encouraging for all public land managers.”

- Kevin Khung, District Ranger, Pagosa Ranger District (USFS)

**Book Mark It!** The project Web site offers reports, education, meeting handouts, maps, agenda, publicity updates and more:  
<http://ocs.fortlewis.edu/mixedconifer/default.htm>

## Vision Statement of the Working Group...

We envision forests that...

- include a healthy and appropriate mix of species, and size and age classes
- can tolerate and withstand insect and disease outbreaks
- are resilient (resilience is the capacity of a system to absorb disturbance and still retain its basic function and structure)
- offer a diversity of economic development opportunities that enable the people living in the surrounding communities to make a living
- enable wildlife to thrive
- are not fragmented and are left in more wild states the further away from residential communities and rural subdivisions
- offer a balance of human uses and natural processes and conditions
- are healthy for generations in the future
- are part of a wider, healthy watershed system that supports human and natural needs

We want communities that...

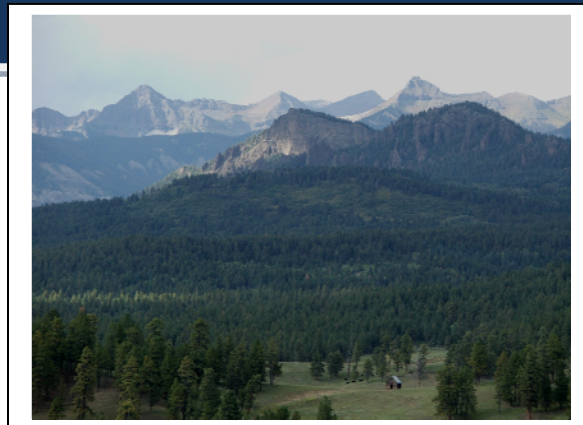
- are able to thrive off the natural resources that surround them
- respect and appreciate the ecological and natural attributes of the forests, and are good stewards of those characteristics
- are economically viable
- remain as safe and prepared as possible related to catastrophic wildfire

We envision residents and visitors who...

- are educated about the forests that surround them and take care of this important resource
- understand why work is being done on certain segments of the public land (e.g. use of controlled fire, motorized thinning, etc.)
- are tolerant of forest health and wildfire prevention efforts because they are educated about the long term benefits
- promote positive stewardship of private lands
- help spread wildfire mitigation and preparation messages

We see collaborative efforts that...

- involve key stakeholders from many sectors working together for balanced approaches to forest management and health along with economic vitality
- are working across disciplines and sectors
- make good use of partnerships and available resources toward specific results



# The Upper San Juan Mixed-Conifer Working Group Report

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## Executive Summary

As the summer of 2012 wildfire season has shaped up to be a very active and catastrophic one in Colorado, locally, a community group has been educating themselves and looking for solutions to the challenges of caring for our forests. The Upper San Juan Mixed-Conifer Working Group was established to provide a venue to share stakeholders' perspectives and to develop science-based collaborative priorities for management and monitoring of mixed-conifer forests on the Pagosa Ranger District (RD) of the San Juan National Forest in southwestern Colorado. As Phase I of the Working Group's assessment is completed in July of 2012, we wish to synthesize a set of criteria for moving forward into Phase II and wish to present the Workgroup's findings to all who are interested. The examination of conditions and trends described in the full report will set the stage for future forest resource management in a holistic and balanced manner that will take into account a broad range of factors. This second phase of our work will focus upon project implementation, community education, adaptive management and monitoring.

While the focus of the Working Group has been on the mixed-conifer vegetation type (about 60,000 acres of warm dry and 84,000 acres of cool-moist mixed-conifer on the Pagosa Ranger District of the USFS), we are aware of adjacent ponderosa pine stands exhibiting conditions that compel treatment needs similar to that of mixed-conifer forests (i.e., need for fuels reduction, forest restoration, or forest health improvement). Particularly at lower elevations, within the wildland-urban interface (WUI), there needs to be coordinated management of ponderosa and mixed-conifer stands, especially to reduce the potential for catastrophic wildfire events.

Being cognizant of the many ecological, social, and economic trade-offs within forest and community landscapes, the following recommendations (many of which are drawn from more specific statements in the full report) are offered as a means of planning and implementing a range of high quality projects that will contribute to improvement in forest conditions on the San Juan National Forest.

In the following sections, a more concise synthesis will be provided for many of the outcomes of the Working Group's two-year study efforts. These themes and parameters are offered as a *set of directions arising from a community workgroup process and guidelines* that will serve as a framework for long-term treatment. They are also intended as *goal and objective statements that can guide implementation and monitoring*, rather than mandates which must be achieved at every step throughout the process.

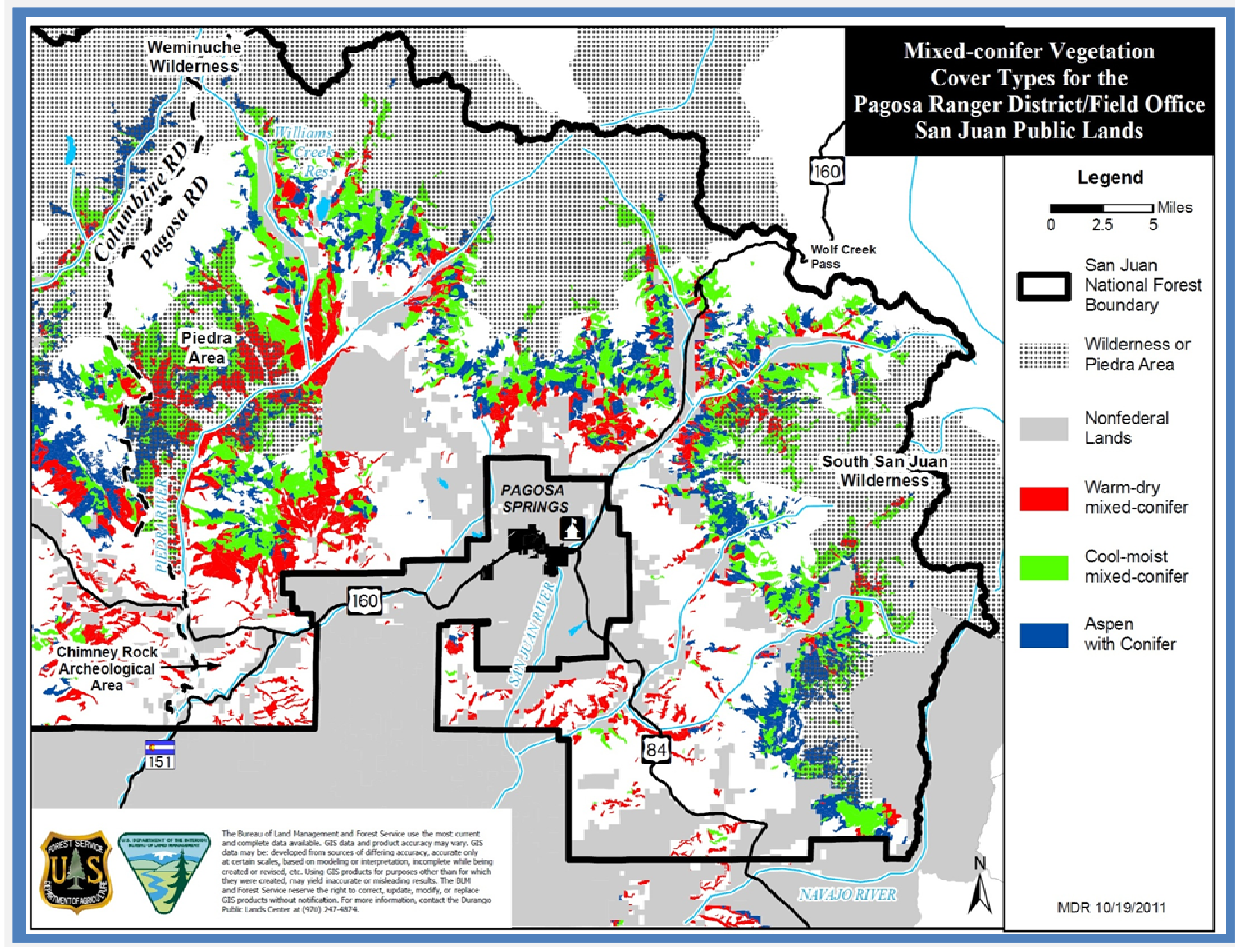
*A set of general principles and values:* To the extent possible, the following guidance will be utilized:

- A watershed perspective will be emphasized as a management framework, wherever possible.
- In some vegetation areas, particularly cool-moist mixed-conifer, additional field monitoring and evaluation are needed as part of an adaptive management approach.
- Management activities will emphasize forest resilience and diversity.
- Environmental assessments for proposed projects will address water quality, wildlife habitat, insect and disease trends, wildfire mitigation objectives, invasive weeds, and recreation activities, among other ecological and community needs and concerns.
- To the degree possible, management activities that mimic natural disturbances will be utilized.
- In the long-term, management actions will seek to create conditions for manageable, planned and unplanned ignitions to meet multiple objectives, such as wildland fire for resource benefit to safely occur in mid to higher elevations.
- Forest management should encourage a sustainable and appropriately-scaled forest product industry, for both community and ecological benefits.
- Sustainable and healthy community life is intrinsically connected to the well-being of diverse, resilient, and naturally functioning forest landscapes.
- Management activities will be designed to meet multiple objectives, coordinate with supportive and/or participative landowners or parties, and foster economic efficiency.

*Project selection priorities:* During Phase II, through consistently involving key and well-informed stakeholders, a process will be established to prioritize forest management projects, which will best achieve the following outcomes. These outcomes reflect where the greatest needs, such as those in the list below, that exist within the current ecological/community situation.

- ✓ Protect public water resource quality.
- ✓ Mitigate wildfire impacts to life and property.
- ✓ Achieve multiple resource benefits and objectives.
- ✓ Address landscapes that fall to the greatest degree outside the “historic range of variability” (HRV).
- ✓ Increase the opportunities for medium-size wildfires to occur safely in the backcountry.
- ✓ Improve wildlife habitat.
- ✓ Reduce the potential for epidemic outbreaks of disease and insect damage.
- ✓ Use mechanical work in roaded areas.
- ✓ Protect recreation opportunities.
- ✓ Recover economic benefits to offset the costs of treatment and monitoring.

The map below illustrates the forest boundary on the Pagosa Ranger District (USFS), Wilderness, nonfederal lands, and the locations of mixed-conifer (warm-dry and cool-moist) as well as aspens.



Wildfire in the Wildland Urban Interface (WUI) is a growing concern for communities across the West, public land managers, ecologists, those interested in tourism and business, and many, many more stakeholders. Wildfire is a significant risk in many areas of our mixed-conifer forest types due to many factors. Read on to learn more!

*Project Identification Process:* While USFS line officers (i.e., District Ranger, Forest Supervisor) will retain official authority on final project selection and approval, collaborative engagement processes will be employed to identify and review potential projects with regard to how they fit the above described principles and values, and implementation guidelines. Some of the individuals that participated in Phase I will continue to engage with staff in order to provide input to USFS-nominated projects in view of the forest health and improvement framework outlined in this report. Participants may assist as needed with community scoping of each project and on-going review through discussions and field trips.

*Phase II Objectives:* As the next phase of improving vegetation management is initiated, the following objectives will be given priority for collaborative work with the community:

- ✓ Informing community members of the needs for improving forest resilience and diversity, and providing education about management goals and vegetation treatment methods and outcomes;
- ✓ Providing opportunities for the affected communities and all interested citizens to know more about what they can do to get involved;
- ✓ Working with USFS staff to formalize and adopt a list of principles, values, and priorities to assist USFS line officers in determining which projects move forward; and
- ✓ Forming and implementing a monitoring plan to guide adaptive management of on-going treatment and restoration projects.

***Working Group Mission: The Upper San Juan Mixed-Conifer Workgroup is committed to collaborative approaches to improving the health and long-term resilience of mixed-conifer forests and the communities located near them in southwest Colorado. The Working Group is focusing on strengthening understanding, sharing knowledge and lessons learned, developing management approaches, initiating high priority projects, and monitoring results using an adaptive framework.***

# The Upper San Juan Mixed-Conifer Working Group Report

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## Introduction

The Upper San Juan Mixed-Conifer Working Group (hereinafter referred to as “the Working Group”) was established to provide a venue to share stakeholder perspectives and to develop science-based collaborative priorities for management and monitoring of mixed-conifer forests on the Pagosa Ranger District of the San Juan National Forest (PRD) in southwestern Colorado. The need for such a group was identified in a community workshop, sponsored by the Colorado Forest Restoration Institute (CFRI), held October 21-22, 2009 in Pagosa Springs, Colorado (find the report here: [http://ocs.fortlewis.edu/mixedconifer/pdf/CFRI\\_Mixed\\_Conifer\\_Report-1.pdf](http://ocs.fortlewis.edu/mixedconifer/pdf/CFRI_Mixed_Conifer_Report-1.pdf).) This report summarizes the learning that has taken place during the first year and a half of the Working Group’s existence.

Mixed-conifer forests generally occur at elevations from 7,500 to 10,000 feet. In southwestern Colorado this zone is typically found between lower-elevation, ponderosa pine-dominated forests and higher-elevation spruce-fir forests. At lower elevations and on warmer aspects the dominant tree species are ponderosa pine, white fir, and Douglas-fir. At higher elevations or on cooler aspects, white fir, aspen, blue spruce, and Douglas-fir are present; slightly cooler/higher still, Engelmann spruce and subalpine fir begin to be observed. Southwestern white pine bridges the gap – it is found at higher elevations but on warm, sunny aspects. As might be evident from this species list, mixed-conifer stands are the most complex forest type found in Southwestern Colorado. There are approximately 250,000 acres of mixed-conifer on the San Juan National Forest, of which 144,000 acres or about 57 percent are located on the Pagosa Ranger District. Timber harvest is thought to be feasible on about 18 percent of the mixed-conifer acreage forest-wide.



*The Colorado Forest Restoration Institute (CFRI) workshop held October 21-22, 2009 in Pagosa Springs, Colorado*

Due in part to the exclusion of fire, mixed-conifer landscapes have been altered from those landscapes that were encountered in the late 1800's. Most of the lower-elevation mixed-conifer (termed warm-dry mixed-conifer), once open and dominated by fire-tolerant species, has become densely forested by small shade-tolerant, fire-susceptible trees. Warm-dry mixed-conifer is considered to be outside its historical range of variation. Mature stands of cool-moist mixed-conifer have come to dominate more forest area where, in the past, healthy aspen overstories often prevailed. The Forest Service has been limited in its ability to shift current conditions back to more desired conditions due to a lack of markets for wood products coupled with a lack of funding to affect management actions such as thinning or prescribed burning.

## **Background and Forming of the Working Group**

The Forest Service requested assistance from scientific partners to gain a better understanding of ecological conditions on the San Juan National Forest beginning in the late 1990s to better inform the anticipated revision of the San Juan Public Lands Forest Plan (Forest Plan -- <http://ocs.fortlewis.edu/forestplan/DEIS/default.htm>). It provided funding support for assessments of the most common vegetation types found in the San Juan Mountains. William H. Romme, M. Lisa Floyd, and David Hanna later synthesized these in a report published on May 12, 2009, titled: *“Historical Range of Variability and Current Landscape Condition Analysis: South Central Highlands Section, Southwestern Colorado & Southern New Mexico.”* The chapter on mixed-conifer forests begins:

*“Mixed-conifer forests are perhaps the most variable and complex of any forest type in the southwest mountains in terms of species composition, stand structure, and dynamics. They also have received little research attention (Romme et. al. 1992). Consequently we have a relatively poor understanding of the long-term dynamics and interactions that have shaped mixed-conifer landscapes in the past, and that explain biotic responses to current management activities.”*

The San Juan National Forest identified increasing understanding of mixed-conifer forests as a priority for assistance from the Colorado Forest Restoration Institute and requested their help with the October 2009 “state of the science” workshop. Eighty-two stakeholders attended the workshop, which included presentations, discussions, and a field trip. It is documented in an April 2010 report titled *“Mixed-Conifer Forests in Southwest Colorado: A Summary of Existing Knowledge and Considerations for Restoration and Management.”* The proceedings noted that:

*“Forest land managers were encouraged to continue to use a collaborative process inclusive of all stakeholders in planning, implementing, and monitoring treatment activities in order to increase knowledge, share values, and build trust.”*

Discussions following the workshop confirmed that an interest in and need for greater stakeholder involvement exists. Interest was especially high due to local efforts to determine the feasibility of using biomass from fuels reduction projects for generating

electricity. It should be noted that in early summer of 2012, the Pagosa Cattle Company was awarded the Pagosa Long Term Stewardship (PLTS) contract. This 10-year contract focuses on forest restoration, provides fire mitigation in WUI, boosts the local economy, improves the quality of wildlife habitats and forges many other forest health benefits.

A core group began to meet to explore forming a collaborative group. They invited participants of the October 2009 workshop and other interested people to a July 23, 2010 meeting where the published report from the workshop was presented and ideas for the future were discussed. The consensus of that group was to form an independent Working Group, which has since met regularly

This work would not have been possible without the assistance of the National Forest Foundation (NFF), which provided a \$15,000 Community Assistance Program (CAP) grant used to provide professional facilitation and organizational management for the Working Group. The San Juan Resource Conservation and Development (RC&D) Council has graciously provided fiscal sponsorship for the NFF grant. The Office of Community Services (OCS) at Fort Lewis College, the Mountain Studies Institute (MSI), CFRI, and the Forest Service sponsored much of the underlying scientific work, and OCS generously donated a Web site to use through the college

Five statements describing the group's purpose were developed during the initial meetings:

- ✓ Sharing and strengthening our understanding of appropriate methods of improving forest health and long-term resilience in the mixed-conifer landscape;
- ✓ Broadening our knowledge of current conditions, conservation needs, and opportunities;
- ✓ Developing a set of management approaches, actions, and projects;
- ✓ Initiating projects that address high-priority needs and opportunities for management; and
- ✓ Establishing follow-up monitoring methods to guide adaptive management.

Sixteen meetings have been held since July 2010, plus six field trips. Seventy-one people are on the email tree, receiving meeting notices and meeting notes; around fifteen people typically attend meetings in person. Many stakeholders report that they are following the group's activities on-line. Meeting documentation and background materials are also posted on a website: <http://ocs.fortlewis.edu/mixedconifer/>. Participants include members of the wood products industry, local and regional conservation and environmental groups, educational organizations, homeowners associations, ranchers, recreation user groups, county government, the Chamber of Commerce in Pagosa Springs, county government and local EMS personnel, the Colorado State Forest Service, the US Forest Service, and interested local residents.

Participants help develop meeting topics and suggest speakers and additional participants to invite. Most of the meetings have included an educational component, either about specific topics (e.g., insects and disease, current and historic range of vegetation

composition, watershed conditions, wildlife, treatment options, etc.) or a particular geographic area. A total of eight polygons or landscapes were examined so that the Pagosa Range District area could be analyzed and discussed in manageable segments which allowed for consideration of each polygon's unique characteristics (refer to the descriptions and map below starting on page 28) .

In the initial meetings, ground rules for meetings were adopted as follows:

- ✓ Collaborative learning – work together to learn together
- ✓ Have respect for other opinions (don't have to agree)
- ✓ Focus on issues, not people
- ✓ One conversation at a time
- ✓ Consensus: don't have to like it but can live with it; strive for full agreement; can use zone of agreement
- ✓ Have fun
- ✓ Welcome clarifying questions – can cover stuff again
- ✓ Explain acronyms and jargon
- ✓ Communicate on roles, authority, and decision space (i.e., Pagosa Ranger District & Working Group)

As a first step, the Working Group set up the Web site in order to keep participants and any interested persons and groups involved and aware of the Working Group's proceedings (<http://ocs.fortlewis.edu/mixedconifer/>).

A mission statement was adopted at the November 19, 2010 meeting:

*The Upper San Juan Mixed-Conifer Working Group is committed to collaborative approaches to improving the health and long-term resilience of mixed-conifer forests and the communities located near them in southwest Colorado. The Workgroup is focusing on strengthening understanding, sharing knowledge and lessons learned, developing management approaches, initiating high priority projects, and monitoring results using an adaptive framework.*

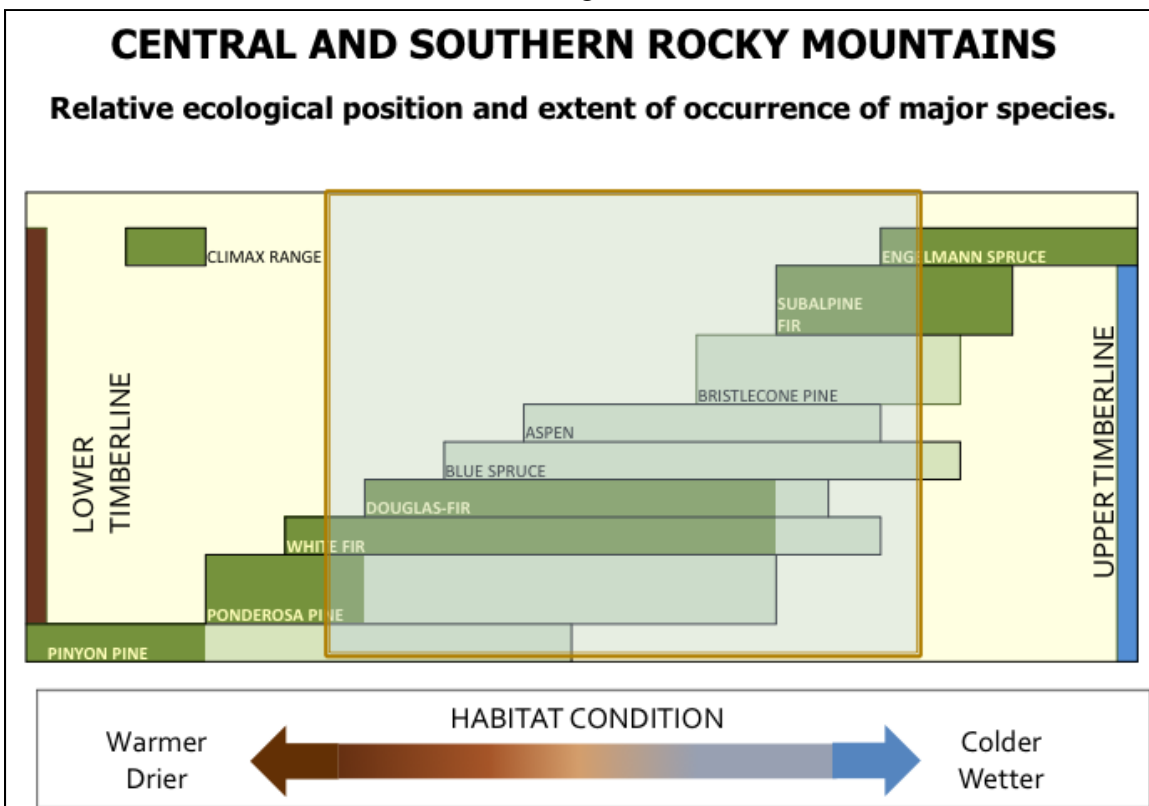
“Upper San Juan” (River Basin) was added to the name of the Working Group at that point to denote the “place-based” interest of the participants. A summary of the meetings follows:



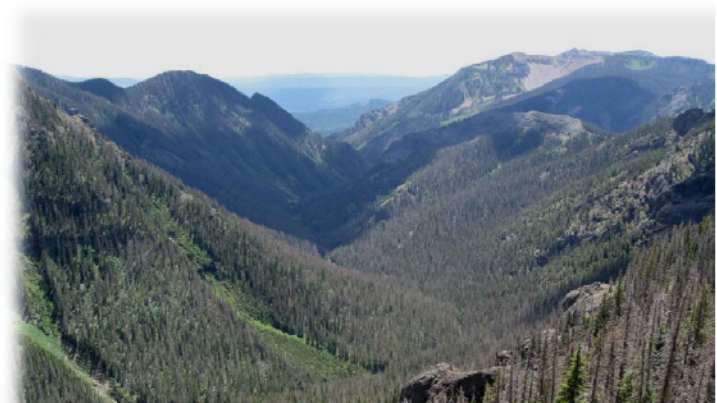
<b><u>Meeting</u></b>	<b><u>Date</u></b>	<b><u>Main Topics</u></b>
1	July 23, 2010	Review of published report from 2009 workshop. Discussion of need for Working Group followed by decision to form one.
2	September 15, 2010	Purpose of the Working Group. USFS processes for timber sales and fuels treatment projects. Discussion topics for future meetings. Field trip to biomass removal demonstration site.
3	October 15, 2010	Working together: principles, shared values, meeting schedule. Desired outcomes. Outreach list. Location of past, current, and potential mechanical treatments. Field trip to view areas that had been treated in different ways.
4	November 19, 2010	Group composition and outreach. Mission statement. Meaning of resilient mixed-conifer forests. Update from attendees of CFRI workshop in Montrose on ecological modeling.
5	December 17, 2010	Review of mission statement and resiliency discussion. Desired future of mixed-conifer forests. Update of topic list. Introduction to Community Wildfire Protection Plans (CWPPs).
6	January 21, 2011	Archuleta and Hinsdale Counties CWPPs. Introduction to polygon (landscape) approach.
7	February 18, 2011	Wildlife and wildlife habitat. Upper San Juan and PlumtaW/Fourmile polygons.
8	March 31, 2011	Little Blanco Basin polygon. Public outreach.
9	April 15, 2011	Water and watersheds. Blanco Basin and Devil/Turkey polygons.
10	May 20, 2011	Price Lakes and Middle Fork/Williams polygons. Discussion of potential community meeting.
11	June 17, 2011	Brainstorming on what we have learned and what we need to do next.
12	September 6, 2011	Working session to review the planned (October 25) community presentation.
13	October 25, 2011	Evening Workshop with presentation to community members beyond working group and to gain feedback.
14	November 18, 2011	Debriefing on feedback from October 25 community meeting.
15	January 20, 2012	Future of group. Education group start-up. Report on NFF National Workshop. Legislation.
16	March 16, 2012	Report discussion. Starting discussion: how to launch monitoring work.

## More on the Upper San Juan Mixed-Conifer Zone

Mixed-conifer forests occur throughout the Intermountain West, generally at elevations between 7,500 to 10,000 feet. In southwestern Colorado they typically occur between lower-elevation, ponderosa pine forests and higher-elevation spruce-fir forests. Tree species typically found in mixed-conifer stands include white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), Englemann spruce (*Picea engelmannii*), subalpine/corkbark fir (*Abies lasiocarpa/arizonica*), aspen (*Populus tremuloides*), blue spruce (*Picea pungens*) and southwestern white pine (*Pinus strobiformus*). Stand composition can vary widely, depending on elevation and aspect. The following illustration depicts how the tree species found on a site vary from warmer, drier, lower elevations to cooler, wetter, higher elevations.



This example of Spruce beetle killed trees to the right illustrates one of the many challenges facing mixed-conifer forests and landscapes.

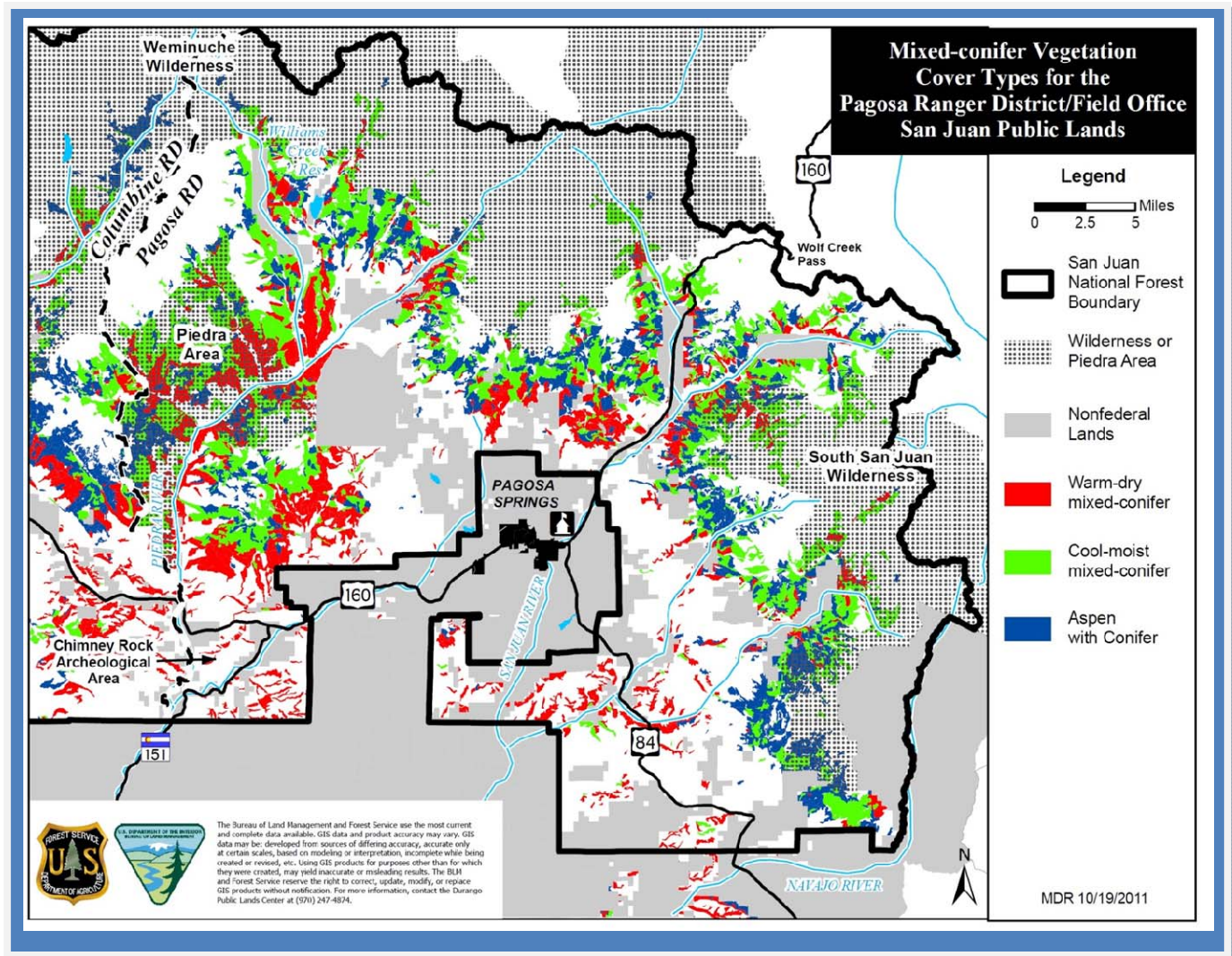


Mixed-conifer is the second most abundant forest type, after spruce-fir, found on the PRD. Roughly 25 percent or approximately 144,000 acres, of the District is comprised of mixed-conifer forest. There are another 51,000 acres of aspen with conifer or about 12 percent of the District. The difference between these classifications is whether conifer or aspen comprise the dominant tree species in the over-story. There is much overlap in management concerns between the two classes.

The San Juan National Forest has found it useful to break mixed-conifer forests into two categories: warm-dry and cool-moist. The following table prepared by Kristen Pelz for the April 2010 CFRI report contrasts the two:

	<b><u>Warm Dry Mixed Conifer</u></b>	<b><u>Cool-Moist Mixed Conifer</u></b>
Environments	Lower elevations, mostly southerly aspects	Higher elevations, mostly northerly aspects
Major Species	Ponderosa pine, Douglas-fir, white fir, Gambel oak, other shrubs	White fir, subalpine fir (both typical [ <i>Abies lasiocarpa</i> var. <i>lasiocarpa</i> ] and corkbark [ <i>A. lasiocarpa</i> var. <i>arizonica</i> ]), Douglas-fir, aspen, blue or Englemann spruce, snowberry, other shrubs
Disturbance Regime	Recurrent, non-lethal fires (20-50 yr. intervals); rare lethal fires (>100 yr. intervals)	Lethal fires at long intervals (>100 yr.); occasional small non-lethal fires; landscape patch mosaic
Common Stand Structure	Overstory of ponderosa pine and/or Douglas-fir, white fir, midstory and/or understory of white fir	Even-aged or all-aged stands of variable species composition and structure
Regeneration of Canopy Trees	Episodic establishment of pine and Douglas-fir, perhaps mainly after fire; adult trees survive non-lethal fire	Episodic or continual establishment of conifers between fires; aspen and possibly Douglas-fir establish primarily after fire
Regeneration of Understory Species	Continual establishment of white fir during intervals between fires; both mature and juvenile fir killed by most fires	Continual establishment of white fir and other shade-tolerant conifers during intervals between fires; most trees killed by most fires

The Pagosa Ranger District includes about 60,000 acres of warm-dry mixed-conifer and about 84,000 acres of cool-moist mixed-conifer as the map below illustrates:



The CFRI report contrasts the local situation with the two types:

*“Due in part to the exclusion of fire, mixed-conifer forested areas, especially in the warm-dry zone, were once open and dominated by fire-tolerant species but have become densely forested by shade-tolerant, fire-susceptible trees. The resulting increase in canopy cover reduces sunlight available to the understory, reducing herbaceous shrubs and grasses. This dramatic change is common in forested landscapes throughout Southwestern Colorado, and has led to a common goal of restoring the landscape to its historical conditions.*

*Cool-moist mixed-conifer forested areas may be within historic range of variability in terms of forest composition, dynamics, and disturbances and may not warrant restoration. However, there are managerial concerns about mortality from large-scale insect outbreaks and age-class distributions skewed towards older stands across the landscapes. Aspen is closely associated with many mixed-conifer forests in Southwestern Colorado. Fire exclusion and past management have in large part decreased the aspen component across the landscape, prompting an interest in maintaining aspen in mixed-conifer landscapes.”* (CFRI M-C Report, 2010, p. 4)

Based on discussions among the CFRI October 2010 workshop participants following the formal presentations, the following areas of agreement were identified (CFRI M-C Report, 2010, p. 15):

- Mixed-conifer forests exist along gradients of environment and composition (due to disturbance regimes) but it is useful to deal with warm-dry and cool-moist categories for practical reasons. Often these two categories can be recognized readily in the field, although sites in the transition area may be ambiguous.
- In general, warm-dry mixed-conifer is farther outside historic range of variability (HRV) than is cool-moist mixed-conifer.
- It is unclear how far out of HRV cool-moist conifer forest is at a landscape level. However, HRV is not necessarily our goal.
- It is useful to evaluate risks of various management options (including no management).
- Coarse-grained, broad-scale vegetation diversity has been reduced in the past century; part of the desired future condition is to increase this diversity in certain areas.
- Monitoring and adaptive management should be an important component of any management plan.
- A high priority for fire mitigation should be proximity to infrastructure and other values at risk.
- A high priority for aspen restoration should be stands affected by sudden aspen decline (SAD). These are mostly at lower elevations and southerly aspects.
- We should create conditions in which mixed-severity fires, intermediate to large in size, can be allowed to burn with acceptable risk and costs.
- It is important to retain, sustain and encourage viable local timber, forest products and biomass industries, within the capacity of the landscape.

- Non-native invasive plant species are not desirable; we should not encourage their spread in our management activities.
- We should manage for diversity and resilience.
- There is more uncertainty about ecology of cool-moist than warm-dry mixed-conifer forest.
- We should manage for desired future conditions, not for current fears.
- We need to think over long time scales. It will take years or decades to achieve our landscape-level desired conditions.
- We acknowledge that climate change will bring additional uncertainties, problems and opportunities.
- We need better information about potential habitat types and their distributions in relation to gradients in elevation, topography and soils.
- We need a better understanding of HRV in cool-moist mixed-conifer forests, including fire regimes and variability in landscape structure.
- We need to know the frequency and importance of extreme disturbances (like 2002 fires) and their role in shaping the mixed-conifer landscape.



This photo illustrates a warm-dry mixed-conifer stand. Please note the dominant ponderosa pine overtopping all other trees. This pine, estimated to be 350-400 years old, is in decline, partly due to age, but also due to the overly dense understory/midstory of relatively young white fir. Fire exclusion has allowed the shade-tolerant, fire-intolerant white fir to proliferate, and compete for nutrients and moisture, on a site that historically underwent frequent, low-intensity surface fires. Also note the complete lack of younger ponderosa pine. A very large, moderately old Douglas-fir lies behind and left of the pine. Also note the scattered aspen, also in decline on this site as a result of fire exclusion and competition by white fir. A wildland fire under these conditions would likely become a high-intensity crown fire as the dense white fir understory/midstory acts as a ladder fuel in carrying fire from the ground into the dense, layered canopy.

## San Juan National Forest's Current and Proposed Management

The San Juan National Forest is in the process of revising its Land Management Plan, also referred to as a Forest Plan, which sets broad direction for the Forest. Specific projects need to be in compliance with the Land Management Plan. The final Plan should be released late in 2012 and the draft can be found at: <http://ocs.fortlewis.edu/forestplan/>. The Plan includes land allocations, or management areas, that delineate different management emphases for particular areas of the Forest and that define the suitability for different types of management activities. This affects the types of treatment options available in mixed-conifer stands in particular locations.

The tables and map below and on the next two pages reflect the proposed management directions in the draft Forest Plan.

<b>Management Area Allocation – Draft Land Management Plan – Pagosa Ranger District</b>		
<b>Management Area</b>	<b>Acres</b>	<b>Proportion of Pagosa Ranger District</b>
MA 1 - Natural Processes Dominate (including Wilderness)	252,107	43%
MA 2 - Special Areas and Unique Landscapes	9,383	2%
MA 3 - Natural Landscapes with Limited Management	169,450	29%
MA 4 - High-Use Recreation Areas	12,457	2%
MA 5 – Active Management (commodity production in order to meet multiple-use goals)	102,509	17%
MA 7 – Public and Private Lands Intermix	42,141	7%
MA 8 – Highly Developed Areas	0	0%
Total	588,047	100%

<b>Suitability for Some Activities by Management Area</b>				
<b>Mgt Area</b>	<b>Wildland Fire for Resource Benefit</b>	<b>Prescribed Burning</b>	<b>Mechanical Fuels Treatment</b>	<b>Timber Harvesting</b>
MA 1	Allowable	Allowable	Prohibited in Wilderness, Restricted elsewhere	Prohibited
MA 2	Varies	Restricted	Restricted	Restricted
MA 3	Allowable	Allowable	Allowable	Allowable
MA 4	Prohibited	Allowable	Allowable	Allowable
MA 5	Allowable	Allowable	Allowable	Allowable
MA 7	Prohibited	Allowable	Allowable	Allowable
MA 8	Prohibited	Allowable	Allowable	Allowable

Suitability for management activities shown in the chart above can also be limited by site-specific factors such as steep slopes and unstable soils. Timber harvesting and road construction to achieve forest restoration objectives is allowable under the management direction in MA 3 but is prohibited in inventoried roadless areas (IRAs). IRAs make up most of that management area due to the Roadless Area Conservation Rule.

The Plan also includes a vision of what the Forest should be like in the future by describing desired conditions. Land Management Plan direction that varies by geographic location is summarized later in this report in the polygon analysis. The desired conditions below apply to mixed-conifer and aspen-conifer forests across the San Juan:

***Warm-Dry Mixed-Conifer Forests*** display variable stand structures and species composition. Most have open canopies with widely spaced trees and multiple canopy layers. Some are dense with closed canopies; others have a clumped structure where trees occur in groups surrounded by shrub and/or herb-dominated openings. Tree species composition includes an abundance of ponderosa pine and Douglas-fir (ranging from young to old). White fir are present but only as a minor component. Snags and large wood (down) are common in late-successional stages, as well as in young stands, following disturbance. Low-intensity surface fires occur in most warm-dry mixed-conifer stands. All development stages of these forests are well represented, including the old-growth stage that is currently under-represented.

***Cool-Moist Mixed-Conifer Forests*** display variable stand structures and species composition. Most are dense with closed canopies and multiple canopy layers. Tree species composition includes an abundance of Douglas-fir (ranging from young to old). Patches of cool-moist mixed-conifer, ranging from small to large, are distributed across the landscape. Snags and large wood (ground) are abundant in late-successional stages. High-intensity, stand-replacement fires occur in most cool-moist mixed-conifer stands. All development stages of these forests are well represented, including the young and mid stages that are currently under-represented.

***Aspen and Aspen-Conifer Forests*** display variable stand structures, with most having high stem densities and high canopy cover. Some stands are even-aged with one or two canopy layers; others are uneven-aged with multiple canopy layers. Patches of aspen and aspen-conifer forests, ranging from small to large, are distributed across the landscape. Snags and large wood (ground) are abundant in late-successional stages. Fires occur in most aspen and aspen-conifer forests. All development stages of these forests are well represented, including the young stage that is currently under-represented.

## **Working Group Process Steps and Results**

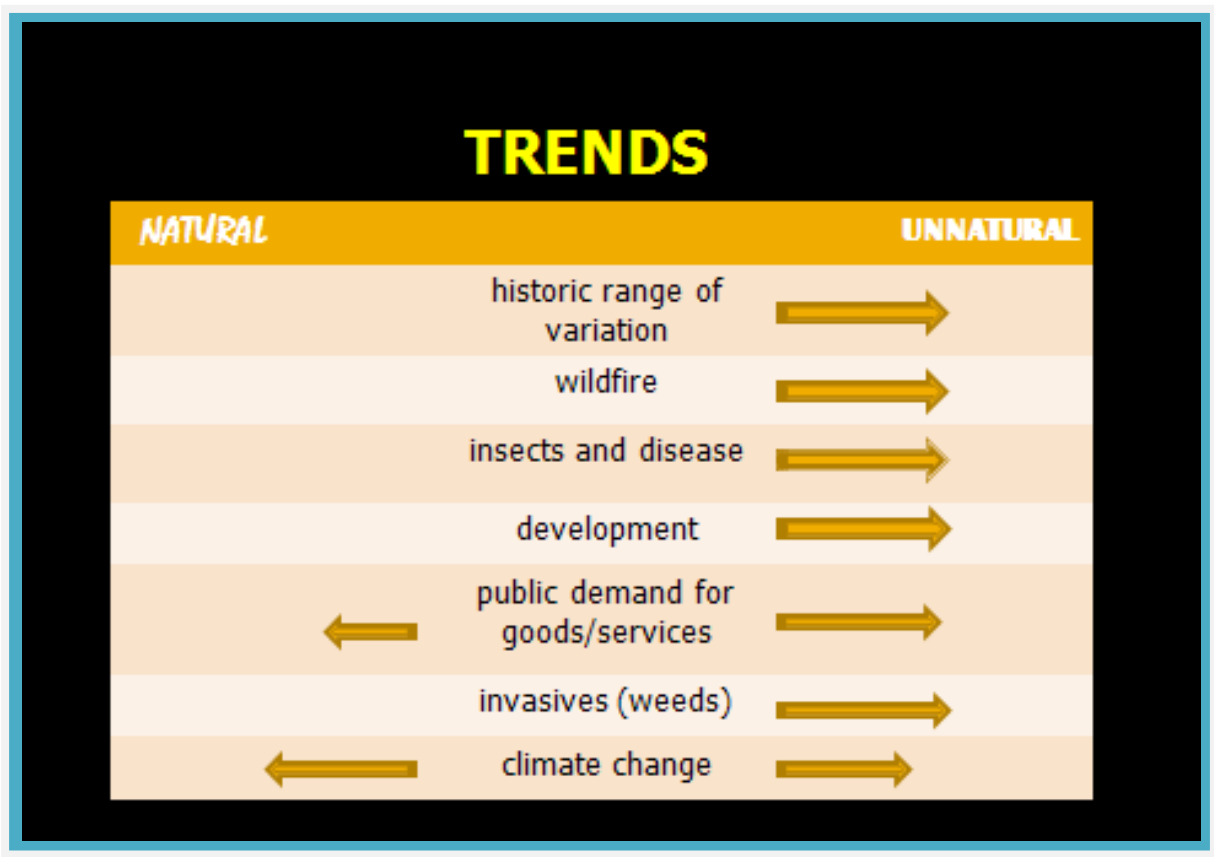
Multiple meetings by the Working Group, leading towards a common understanding of resource conditions, desired conditions, and management challenges and opportunities, have resulted in the following emphasis points in the areas of expected Trends, Needs for Mixed-Conifer Management, Guiding Principles of Forest Restoration, and Strategies for Management. More detailed comparisons between sub-District geographic areas (i.e., “polygons”), plus information gained from the October 2011 Community Meeting also follow. Trends identified for the Upper San Juan area and discussed over the course of the Working Group’s meetings as well as ones that may affect mixed-conifer forests include:

- Many warm-dry mixed-conifer stands appear to be outside the historic range of variability (HRV) - the range of variability in structure, composition, function, and dynamics of ecosystems prior to Euro-American settlement. One hundred thirty-five years of fire exclusion and other factors have resulted in:
  - overly dense forests
  - greater abundance and distribution of ladder fuels
  - increased competition for moisture and nutrients
  - an abundance of host habitat for insects or disease
  - expansion of shade-tolerant species/contraction of shade-intolerant species
  - much live & dead fuel
  - homogeneity (sameness)
- Changed wildfire behavior:
  - more fuels, resulting in hotter fires
  - more ladder fuels and more dense, contiguous stands, leading to more stand-replacing canopy fires, which:
    - are harder to control
    - have greater ecological severity
    - pose greater risk to people and property
    - draw resources away from other tasks
    - cost significantly more
    - produce more smoke
    - increase sediment
    - increase flooding
    - affect recreation, wildlife, fisheries, esthetics, and economies

- Increased tree mortality from insects and diseases:
  - more “beetle bait” (i.e., host habitat) increasing risk for epidemics
  - more “sameness” leading to larger-scale and longer duration outbreaks
  - recent/current epidemic-scale mortality in white fir, Douglas-fir, aspen, spruce
  - interplay with HRV departure, wildfire risk, climate change, invasive species
- Increased development with:
  - greater risk for starting fires;
  - greater hazard to people and property from fires and post-fire effects;
  - increased demand for fire suppression/protection resources during fires;
  - increased public demand for goods and services; and
  - “NIMBY” or “hands-off” management desires often reflected by new residents.
- declining US Forest Service budgets
- increased and often conflicting demands for goods and services
- loss of wood products industry
- invasive species increasing in area, new species, and rate of introduction
- climate change including:
  - warmer temperatures;
  - lower stream flows;
  - precipitation changes (perhaps more rain, less snow);
  - earlier and shorter snow runoff, perhaps with higher peaks due to less water infiltration;
  - shifts in plant, wildlife, and fish habitats; and
  - changes in insect life cycles.

*A key consideration the Working Group is addressing in their work is: Should these trends continue unaddressed, several undesirable results will continue, or worsen:*

- ✚ Significant portions of this forest type will remain outside the range of natural variability and less resilient to disturbance (such as fire or insect and disease attack).
- ✚ The extent and severity of disturbance could increase (for instance, areas in the wildland-urban interface could become more prone to catastrophic wildfire).
- ✚ Habitat degradation will expand.
- ✚ Increased insect and disease activity, resulting in dead or declining trees becoming more prevalent.
- ✚ Tourism and scenery will continue to be affected.
- ✚ Economic opportunities could be hampered.



## Needs Associated with Mixed-Conifer Ecosystem Management

Based on all of these dynamics, the goal should be to increase the natural functioning of mixed-conifer forests by these approaches:

- Use a variety of “coarse” and “fine” management techniques in appropriate areas to increase the natural range of variability of mixed-conifer forests.
  - coarse = management-ignited and lightning-caused fire
  - fine = mechanical (e.g., chainsaws, mowers)
- Manage natural ignitions after planned treatments are accomplished to expand the area of desired influence.
- Monitor effects of treatments and adjust as needed.
- Allow (or encourage) appropriate economic development projects that are scaled to the local communities.
- Engage and educate the public through the continued work of the Education and Outreach Committee and through engaging with partners.
- Increase local planning, prevention and stewardship efforts (e.g., assist with the implementation of county- or neighborhood-specific ‘Community Wildfire Protections Plans’, promote Firewise principles, cooperate with neighbors and other entities, and work with nearby treatments).

Please refer to Attachment B for a detailed write up on treatment options.

## Guiding Principles of Mixed-Conifer Forest Restoration

Several early meetings of the Working Group included discussions of guiding principles for restoration of mixed-conifer forests. The key theme that emerged from these discussions was a need for the forests to be resilient. The following definition (taken from the USDA Forest Service planning rule website) was adopted:

*“Resilience is the capacity of a system to absorb disturbance and still retain its basic function and structure.”*

The Working Group elaborated on what that meant with a brainstorming session on November 20, 2010:

- Diversity of species (tree & wildlife), including having a mix of size and age classes
- Ability to recover from expected natural disturbance
- Presence of insects and disease at endemic levels

- Area reflects the desired condition(s) over the long term
  - To accomplish this, we need a baseline for desired condition(s)
  - It is our job to define desired conditions
- A mix of natural and human factors should be found across the landscape
- Bring in historical perspectives
- Meaning varies in WUI, wilderness, and working forest
- More natural areas should be found further away from WUI, but it should be as natural as possible in WUI with limits
- Resilience should be considered as an overlay of social, economic and ecological factors
- Resilience includes both ecological conditions and communities (both are related and desired)
- Maintain connectivity (lack of fragmenting) for: wildlife habitat, other types, migration, and natural processes
- Recognize that many forces are in play
- Acknowledge impacts of human population
- Resilience to changing climate is important
- Concept of working forest



This picture is an example of aspen decline, which is occurring at various rates, the most severe recognized as the phenomenon known as Sudden Aspen Decline or “SAD.”

## Vision Statement

Over the course of several meetings, the Working Group designed the following vision statement for how they see healthy and resilient forests in the future and what they hope for...

## Vision Statement

We envision forests that...

- include a healthy and appropriate mix of species, and size and age classes
- can tolerate and withstand insect and disease outbreaks
- are resilient (resilience is the capacity of a system to absorb disturbance and still retain its basic function and structure)
- offer a diversity of economic development opportunities that enable the people living in the surrounding communities to make a living
- enable wildlife to thrive
- are not fragmented and are left in more wild states the further away from residential communities and rural subdivisions
- offer a balance of human uses and natural processes and conditions
- are healthy for generations in the future
- are part of a wider, healthy watershed system that supports human and natural needs

We want communities that...

- are able to thrive off the natural resources that surround them
- respect and appreciate the ecological and natural attributes of the forests, and are good stewards of those characteristics
- are economically viable
- remain as safe and prepared as possible related to catastrophic wildfire

We envision residents and visitors who...

- are educated about the forests that surround them and take care of this important resource
- understand why work is being done on certain segments of the public land (e.g. use of controlled fire, motorized thinning, etc.)
- are tolerant of forest health and wildfire prevention efforts because they are educated about the long term benefits
- promote positive stewardship of private lands
- help spread wildfire mitigation and preparation messages

We see collaborative efforts that...

- involve key stakeholders from many sectors working together for balanced approaches to forest management and health, along with economic vitality
  - are working across disciplines and sectors
  - make good use of partnerships and available resources toward specific results
-

## Polygon (aka “Sub-Area”) Analysis

The Upper San Juan mixed-conifer area was divided into smaller polygons (also termed geographic areas or landscapes) to refine the place-based approach of the Working Group. The Pagosa Ranger District staff developed maps and handouts (located on the web at: <http://ocs.fortlewis.edu/mixedconifer/handouts.htm>) and presented information about each polygon throughout the spring of 2011. Each presentation was followed by a discussion among Working Group members. The discussions are documented in the meeting notes, which along with the handouts and maps can be found on the Website (find the agendas and meeting notes here: <http://ocs.fortlewis.edu/mixedconifer/meetings.htm>).

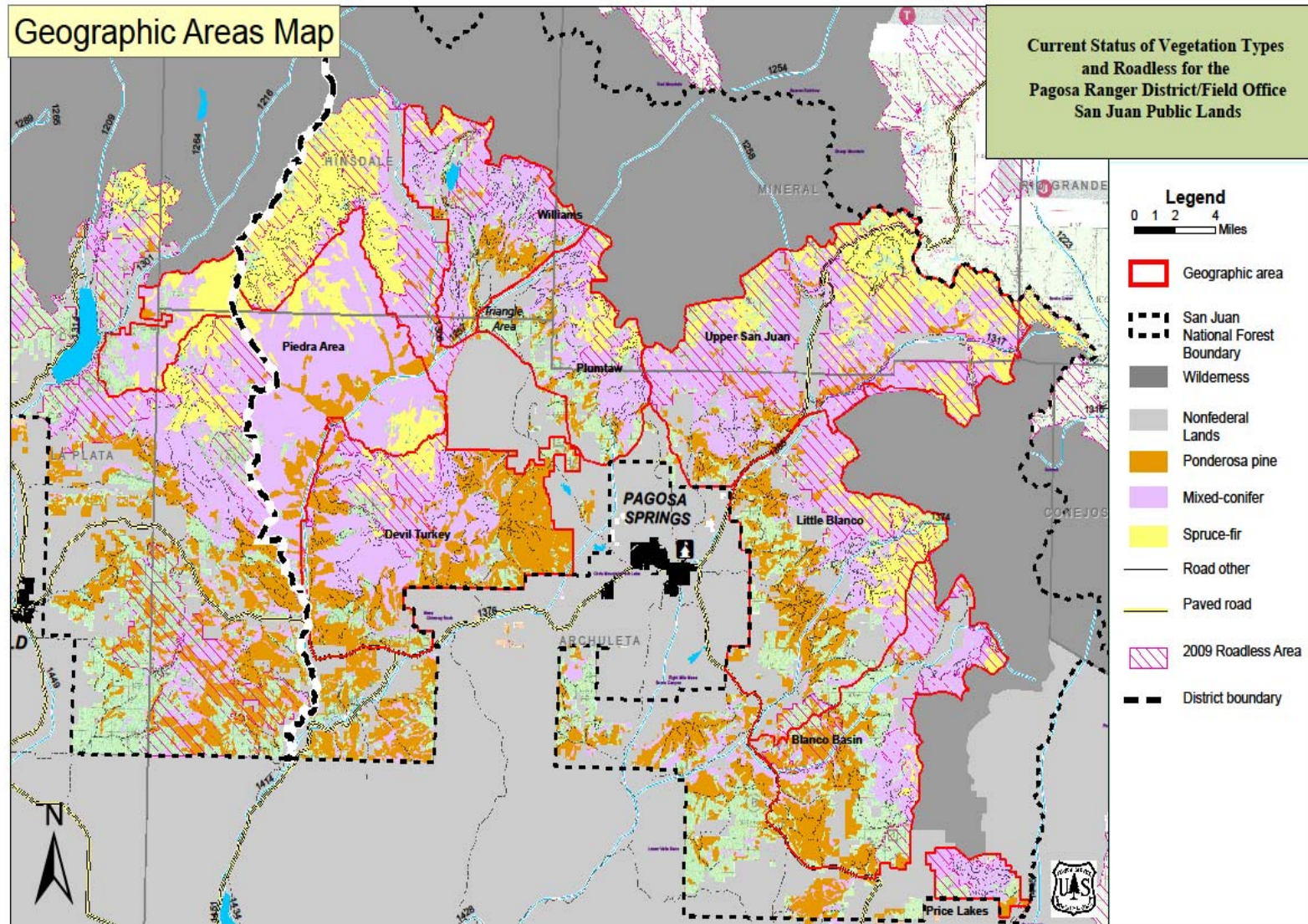
The Working Group then compared and contrasted the unique a) characteristics, b) management emphasis, c) desired conditions, and d) opportunities among and between the polygons. The map and summary table that follow on the next pages displays the similarities and differences between the polygons, and is intended to provide a general sense of the direction for management over a multi-year restoration program.

It is important to note the commonalities across all polygons. Regarding *Characteristics*, all geographic areas display high scenic qualities. Also, aspen decline is occurring throughout the mixed-conifer/aspen range on the Pagosa Ranger District.

Regarding *Opportunities*, there is potential for a) fostering prescribed fire throughout the mixed-conifer zone, b) removing mixed-conifer (cutting or burning) to stimulate aspen regeneration, or c) treatment of noxious weeds. And in many instances, there are opportunities to collaborate with adjacent landowners to accomplish treatments, whether it be thinning contracts, prescribed burning, or weed treatments across common boundaries.

Regarding *Desired Conditions*, those appropriate for mixed-conifer forests on the Pagosa RD are:

- resilient forest conditions, including insects and disease occurring at endemic levels;
- diversity in tree composition and size/age classes, including healthy aspen intermixed with conifer;
- reduced risk for wildfire in or near WUI; or
- human-initiated disturbances mimicking natural disturbances.



Please find each “Poly” map on the Web site here:  
<http://ocs.fortlewis.edu/mixedconifer/handouts.htm>

**Table: Polygons: Area, Characteristics, Management Emphasis and Desired Conditions**

<b>Devil/Turkey</b>	<b>characteristics</b>	<b>opportunities</b>
	Significant recreation use; immediately west of largest POA in county. Proposed Wild and Scenic river, “Piedra”. About half of mixed-conifer is in roadless. Adjacent to Piedra Area, managed for “wilderness character”. Key big-game migration corridor (north/south) between Chris Mountain and the Piedra River.	Thinning coupled with biomass utilization. Rx burning – several approved burn plans and some in planning. Weed-treatment potential to eradicate some small populations.
	<b>management emphasis</b>	<b>desired conditions</b>
	Public and private lands intermix (WUI). Natural landscapes/limited mgt coupled with “natural processes dominate”, in roadless. Active management (generally, timber and range mgt) elsewhere.	Fire-resistant forests in eastern half of geographic area (west of Pagosa Lakes). Maintain appropriate vegetation cover for big-game migration corridor.
<b>Piedra</b>	<b>characteristics</b>	<b>opportunities</b>
	Low-, middle-elevation area set aside to be managed for wilderness character. (Most wilderness areas are at high elevation.) No roads; no motorized use. Proposed Wild/Scenic River. Moderate trails network; has been used for management purposes. Substantial area with overstory of large, old ponderosa pine and Douglas-fir.	Study use of Rx fire on restoration of undeveloped mid-elevation forests. Current projects include: 4-year Colorado Parks & Wildlife study on black bear populations; Piedra Area Rx Burn Plan covering about 16K acres (have completed ~3400 ac); “Birds and Burn Study” [one of 13 research sites across western US – Birds and Burns Network].
	<b>management emphasis</b>	<b>desired conditions</b>
	Natural landscapes/limited mgt coupled with “natural processes dominate” (wilderness and roadless) - similar to current forest plan.	Natural processes dominate, including frequent, low-intensity wildland fire. Maintain pre-settlement ponderosa pine and Douglas-fir.

<b>Williams</b>	<b>characteristics</b>	<b>opportunities</b>
	Heavily-used recreation area. Moderate open road access. Substantial roadless area. Proximity and access to wilderness. WUI, including main open roads, scattered about. Contains largest concentration of developed recreation sites on District. Key raptor nesting areas around Williams Ck Reservoir (eagles, osprey). Includes only lake of substantial size outside of wilderness.	Rx burning potential, especially into roadless and wilderness. (Rx burning smoke constraints not as great as when working closer to Pagosa Springs.) Inventory road network segments suitable for decommissioning. Road network provides access for thinning, burning, wood product utilization.
	<b>management emphasis</b>	<b>desired conditions</b>
	Recreation, both developed and dispersed, and associated access (e.g., roads, trailheads). Natural landscapes/limited mgt, in roadless. Active mgt (timber, range) elsewhere.	Maintain scenic & recreational values, and associated public access. Collaborate with ranchers on weed management.
<b>Plumtaw</b>	<b>characteristics</b>	<b>opportunities</b>
	Popular recreation area; includes only substantive loop road opportunity on the district, with prime fall aspen viewing (i.e., Fourmile to Plumtaw to Piedra). Slight to moderate closed road network. Moderate-sized area in roadless. Proximity, and 2 key access points, to wilderness. High water value: includes Fourmile Ck diversion, providing nearly half of municipal water for Pagosa Springs. Includes proposed Martinez Creek Research Natural Area (RNA).	Rx burning potential, especially into roadless and wilderness. (Rx burning smoke constraints not as great as when working closer to Pagosa Springs.) Find road segments suitable for decommissioning. Road network provides access for thinning, burning, wood product utilization. Foster aspen regeneration. Collaborate with ranchers on weed management.
	<b>management emphasis</b>	<b>desired conditions</b>
	Recreation (hunting; driving for pleasure). Active mgt (timber, range). Natural landscapes/limited mgt.	Maintain scenic & recreational values, and associated public access.

<b>Upper San Juan</b>	<b>characteristics</b>	<b>opportunities</b>
	<p>Area dominated by roadless (&gt; 75%). Heavy use from limited road access. Geographic area bisected by SW Colorado's dominant highway (US 160). Includes East and West Forks of the San Juan. High water value: Includes much of drainage, and diversion, for other "half" of PS municipal water. Includes upper slopes of Jackson Mtn landslide – geographic risk feature for water and natural gas pipelines, powerline, and US 160. Also includes East Fork landslide. Spruce beetle epidemic ongoing.</p>	<p>Rx burning potential, especially into roadless and wilderness (though smoke problematic for US 160 travelers, Upper San Juan valley, and Pagosa Springs community).</p>
	<b>management emphasis</b>	<b>desired conditions</b>
	<p>Recreation; scenic routes. Natural landscapes/limited mgt.</p>	<p>Maintain scenic &amp; recreational values, and associated public access. Stable Jackson Mtn and East Fork landslides.</p>
<b>Little Blanco</b>	<b>characteristics</b>	<b>opportunities</b>
	<p>Broken up by numerous blocks (in holdings) of private land. Substantial amount of dead or diseased white fir. (White fir mortality spike in 2004-2006). Nipple Mtn Rd very popular recreation access. Spruce beetle epidemic ramping up. Substantial roadless area (&gt; 50% of MC/aspen w/ Conifer stands).</p>	<p>Broaden Rx burning potential into roadless/wilderness, especially after and in conjunction with restoration thinning &amp; aspen regeneration cutting.</p>
	<b>management emphasis</b>	<b>desired conditions</b>
	<p>Public and private lands intermix (WUI); Natural landscapes/limited mgt coupled with natural processes dominate (roadless); Active management (generally, timber and range mgt)</p>	

<b>Blanco Basin</b>	<b>characteristics</b>	<b>opportunities</b>
	<p>Bulk of mixed-conifer lies in eastern half, and in roadless. Limited road access. Several trailheads with access to South San Juan Wilderness.</p> <p>Numerous areas of erodible soils. Includes one of only three watersheds on SJNF initially identified as having “poor” watershed rating in spring 2011 nationwide evaluation (i.e., Middle Rio Blanco). Includes some of largest aspen stands on Pagosa RD.</p>	<p>Broaden Rx burning potential into roadless/wilderness. Biomass utilization along Castle Creek Road (FSR 660). Inventory fisheries improvement projects when/where in proximity to mixed-conifer treatment areas</p>
	<b>management emphasis</b>	<b>desired conditions</b>
	<p>Public and private lands intermix (WUI). Natural landscapes/limited mgt coupled with natural processes dominate (roadless). Active management elsewhere (timber and range mgt).</p>	
<b>Price Lakes</b>	<b>characteristics</b>	<b>opportunities</b>
	<p>Smallest geographic area; much in roadless. Nearly surrounded by private lands. Only one FS road for access (i.e., NFSR 731). Much of area, including roaded portion, is unstable and with numerous wetlands. Greatest concentration of N. Leopard Frogs on RD. Have a proactive neighbor conducting forest restoration (Banded Peak Ranch). One of few areas with oil/gas potential.</p>	<p>Prescribed burning. Given good neighbor to east, potential for treating across federal/private boundary. Success with Banded Peaks Ranch could lead to cooperation with other landowners on treatment efforts. Eradication of chamomile (noxious weed). Decommissioning of old system roads.</p>
	<b>management emphasis</b>	<b>desired conditions</b>
	<p>Natural landscapes/limited mgt (roadless); Active management (especially, range mgt) elsewhere.</p>	<p>Maintain wetlands (and N. Leopard frog habitat).</p>

## Working Group Survey and Community Meeting

In order to broaden the discussion and hear from a diversity of voices, and to present “early” findings, a Community Workshop was held on October 26, 2011 with 26 people attending. The purpose of this event was to present the Working Group’s learning and issues gathered to date and seek feedback and input. An extensive Power Point presentation was developed for this event, which can be tweaked and improved for wider, diverse audiences. At this Workshop and then later online, a questionnaire was distributed.

The nineteen responses are summarized below. Find the survey results and the Power Point given at: (<http://ocs.fortlewis.edu/mixedconifer/pdf/MixedConiferFeedbackSurveyResultsDec2011.pdf>).

- Focusing forest restoration treatments in areas with the highest risk of wildfires that might damage watersheds or private property was the highest priority location identified. Working in the wildland-urban interface, especially where work was being done on adjacent properties was identified as a high priority. Working in areas that are the most changed from historical ecological conditions and in areas that are already roaded were strongly supported. Working in areas that are more “wild” such as the backcountry or Wilderness had less support.
- Protecting urban water supplies, watersheds and distribution systems was the most strongly supported parameter to consider when selecting forest restoration projects. Restoring ecosystems to more natural conditions, reducing the potential for insect and disease epidemics, reducing wildfire risk from dead or dying trees, and increasing opportunities for medium-sized wildfire to occur safely followed in priority. Being cost effective, protecting fire-fighter and community safety, and increasing local employment also ranked high, followed by improving wildlife habitat and protecting other ecological values. Sustaining recreation opportunities and working in key view corridors were ranked the lowest of the listed parameters with scores of 4.2 and 4.6 on a scale of 1 (highly supportive) to 10 (least supportive).

## Setting Priorities for Treatment

Following nearly 18 months of meetings, the Working Group was offered a perspective on how the San Juan National Forest – and in particular, the Pagosa Ranger District – sets priorities for vegetation treatment, given the many challenges and, at times, competing demands and objectives faced by agency personnel. The following information was offered by Kevin Khung, Pagosa District Ranger. Please refer to Attachment B for a discussion of the various types of treatment tools available.

*First and foremost, forest vegetation objectives for meeting needs for public safety are critical. Cooperative work with communities, public safety and emergency responders, associated governmental entities and/or large property owners has enabled the Pagosa RD to provide input and support in completion of Community Wildfire Protection Plans. Defining and mapping the wildland/urban interface (WUI), identifying affected landowners and risks, and planning and coordinating treatments to reduce such risks has become a key focus of the District's efforts.*

*Watershed protection is a secondary priority, and is especially important where management can promote protection of municipal water supplies.*

*Following the above priorities, there are many other values that the District Ranger weighs when considering what projects move forward (note: these are not in any specific order):*

- *Public Access: The San Juan NF has been recognized as a premier recreation-emphasis destination. Access is important to visitors, and to the economy of Archuleta County. And, there are other users that count on access to national forest lands – fuelwood gatherers, range permittees, special-use permit holders, etc.*
- *Meeting Multiple Objectives: Given so many demands, and limited resources, the Pagosa Ranger District favors projects that can meet the multiple-use mission of the agency. This approach can result in the best “bang for the buck.”*
- *Flexibility: Establishing projects that enable flexibility in implementation, and/or setting up treatment plans across a range of projects – small to large, simple to complex – allows for capturing windows of opportunity when the chance to do something on the ground presents itself.*
- *Wildlife Habitat Improvement: Given legal, policy, and public attention focus on maintaining habitat and protecting species, opportunities for affecting beneficial actions on wildlife have a strong influence on priorities.*
- *Resilience of Forested and Social Communities: Though these values overlap, to some degree, with those above, the Pagosa Ranger District recognizes that the further our forestlands have been altered from historical, sustainable conditions, the greater the risk of loss of key ecosystem components. And that has a direct connection with local communities, like Pagosa Springs, that rely upon the many resources provided by the surrounding forest.*

Working group members in attendance when Kevin Khung, the District Ranger, shared the above, affirmed his perspective, given information shared through many meetings, in shaping project prioritization.

- The following pictures include an example of local bio-mass harvesting and a prescribed fire, both on the Pagosa Ranger District.



## Education and Outreach Subcommittee

Prior to the Community Workshop, a group formed to plan it. After the Community Workshop, this group grew and eventually became the Education and Outreach Subcommittee. The reasoning behind forming this committee is that the findings, recommendations, learning and messages, the group decided, needed to be taken to much broader audiences and that this will require a concerted effort, and funding. The committee's first step was to develop a plan (see Attachment D) and the group, at this writing, is working to build capacity via developing reliable, creative and ongoing funding streams for projects, education and community engagement.

## Future Steps for the Working Group

Three roles for the future of the Working Group or what is now known as "Phase II" appear to be supported by all participants:

1. Continued education for key stakeholders and the general public, including:
  - a. Keeping a committee that formed during Phase I in place to develop a detailed education/outreach plan and implement it, including securing necessary funding.
  - b. Exploring the idea of a funding mechanism organized around the concept of "Protect Your Watershed."
  - c. Partnering with groups that have related interests such as Firewise of Southwest Colorado, the Mountain Studies Institute, Fort Lewis College and the San Juan Mountains Association.
  - d. Forming and organizing a speakers' bureau and participating in other group's meetings.
  - e. Highlighting demonstration projects and organizing experiential learning.
  - f. Having high-quality educational materials via various media forms with a particular emphasis on tailoring messages to various audiences.
2. Continued existence but with a less frequent meeting schedule to provide feedback on new projects. Keeping the Web site active for the next phase. Expanding the focus to other vegetation types, particularly ponderosa pine. Developing more of a watershed focus. Explore hiring a coordinator for Phase II.
3. Promoting adaptive management through a process of project review, coupled with monitoring and evaluation of effects of implementation, and fed back into planning and design of similar, upcoming projects. As part of that strategy:
  - o Partnering with CFRI, MSI, Fort Lewis College, Colorado State University and other entities to develop a monitoring and evaluation strategy.
  - o Seeking information from similar project, elsewhere, including research publications and other monitoring/evaluation efforts, to increase education regarding implementation strategies and results.

New sources of funding will be needed to implement most of these actions. In addition to seeking grants, innovative new approaches should be explored with local businesses and water users.

## Conclusion

The Upper San Juan Mixed-Conifer Working Group stands poised to move into Phase II. After two years of studying complex issues, many hours of discussion and planning, this report presents a framework and ideas with actions, which if implemented, can lead to healthier forests and communities.

Thank you to everyone who is participating and interested.

## *What you can do:*

- *Join the Working Group or get on the email tree (contact: [porternorton@bresnan.net](mailto:porternorton@bresnan.net) or 970-759-3110).*
- *Check out the Web: <http://ocs.fortlewis.edu/mixedconifer/default.htm>*
- *Request a speaker from the Working Group.*
- *If you live in or near the forests, mitigate your property. Become Firewise! A trusted, local resource is the Southwest Colorado Fires Web site and clearing house: <http://www.southwestcoloradofires.org/default.asp>*
- *Serve as a Firewise Ambassador for your neighborhood . Find out more at: (<http://www.southwestcoloradofires.org/FireWise/ambassadorProgram.htm>).*
- *Attend field trips or seminars on forest health topics.*
- *Become educated on projects that address forest health and forest resiliency. Give your voice!*
- *Share this report with your friends.*

## ***Attachment A***

### **Working Definitions**

#### **Desired Conditions**

Desired conditions encompass the overarching goals of land and resource management. They are statements of the social, economic, and ecological attributes and values toward which management strives to achieve. These statements or descriptions characterize or exemplify the desired outcomes of land management. They describe how the area is expected to look and function in the future.

(from Draft Land Management Plan, San Juan Public Lands, 2007)

#### **Fragmentation**

Fragmentation is a process by which habitats are increasingly divided into smaller units, resulting in increased isolation of habitat and reduction of interior to edge ratio, as well as losses of total habitat.

(from Draft Land Management Plan EIS, San Juan Public Lands, 2007)

#### **Restoration**

Ecological restoration is the process of assisting the recovery of an ecosystem (with respect to its health, integrity, and sustainability) that has been degraded, damaged, or destroyed.

(from The Society for Ecological Restoration International Primer on Ecological Restoration)

#### **Recovery**

An ecosystem has recovered - and is restored - when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It will sustain itself structurally and functionally. It will demonstrate resilience to normal ranges of environmental stress and disturbance. It will interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions.

(from The Society for Ecological Restoration International Primer on Ecological )

#### **Resilience**

Resilience is the capacity of a system to absorb disturbance and still retain its basic function and structure.

(USFS Planning Rule website)

## ***Attachment B***

### **Vegetation Treatment Options** (Steve Hartvigsen, PDR)

**Mechanical Treatments:** Mechanical treatment broadly refers to some degree of tree cutting. Thinning refers to removing some or many of the trees on a site to reduce stand density. Overstory removal refers to removing all, or nearly all, of the tree cover, sometimes leaving smaller trees in the understory. In nearly all cases for the mixed-conifer forests on the Pagosa Ranger District, thinning of the stand is the most appropriate mechanical treatment to meet desired conditions for stand structure and composition. Some typical examples by mixed-conifer cover type follow.

**Warm-dry mixed-conifer:** Existing ponderosa pine, and to a lesser degree Douglas-fir, would be favored for retention in most cases. White fir, which has generally proliferated during the last century of fire exclusion, would be selected for removal. Blue spruce, often filling a similar niche as white fir, but found in cold-air sinks, would be removed as well. Minor thinning of poor quality pine or Douglas-fir would also occur. Preferably, whole-tree removal would result in little or no slash (like tree limbs or tops). If the means for removal did not include removal of slash, follow-up chipping or burning of the slash would be prescribed, followed by broadcast burning.

**Cool-moist mixed-conifer:** Douglas-fir would generally be favored for retention. Ponderosa pine would not be expected in this cover type but the rare individual would be prioritized for retention. Southwestern white pine would be retained. Retention of other species could vary widely due to existing conditions for insects and disease. Spruce (Engelmann or blue) would be desired if healthy and observations indicate spruce beetle mortality is not ongoing. True firs (white or subalpine/corkbark) would generally be favored for removal. Dense stands would have to be evaluated for windthrow risk given that most of the above species are prone to failure if a dense stand is moderately to heavily thinned.

Another option in cool-moist mixed-conifer is to favor aspen. This can be accomplished either by aggressive thinning to create canopy gaps of various sizes or by clear cutting. A viable aspen clonal root system almost always exists in this cover type. Gaps created from the cutting of only a few overstory trees will normally cause substantial suckering. It is usually desirable to retain some to many of the existing healthy Douglas-fir while removing virtually all true fir and spruce to enable regeneration of both Douglas-fir and aspen. Douglas-fir, a long-lived and relatively windfirm species has suffered from a Douglas-fir beetle epidemic in recent years. Aspen has been in moderate-to-severe decline throughout its extent on the San Juan National Forest.

A third key option in cool-moist mixed-conifer would be clear-cutting of the stand in order to regenerate aspen. This strategy serves to replicate, in an admittedly artificial way, the disturbance and succession processes that used to occur historically with fire. Coniferous forests are prone to burn during drought and high-risk fire-weather periods. Aspen forests rarely burn to the same extent. Historically, a stand-replacement fire might burn through cool-moist mixed-conifer during a severe burning period killing the

coniferous overstory and resulting in a flush of aspen sprouts. Eventually, over a few hundred years, conifers would overtake the aspen and gradually become dominant, restarting the cycle. Aspen dominance and conifer dominance alternate on and off over the cool-moist mixed-conifer landscape. Given the challenge of planning and implementing stand-replacement fire in the mixed-conifer landscape, mechanically removing the conifer overstory is a more controlled means of replicating that process.

**Aspen with conifer:** The options normally prescribed for this cover type follow the second and third options described above for cool-moist mixed-conifer that is, favoring aspen to a small or great degree through the creation of small or large gaps.

**Equipment Choices for Mechanical Treatment:** The mechanical treatments described above can be accomplished using a variety of equipment. The equipment choice isn't always critical to the goals of the treatment but some means are favored over others.

Since the advent of the chainsaw and dozers, the conventional method for cutting trees was by sawyers felling trees in advance of skidding operations. Only the boles or trunks of trees were removed; branches and tops (and defective portions of boles) were left at or near the site of the felled tree.

With greater mechanization, sawyers are often replaced with feller/bunchers. A typical feller/buncher, run by an operator within an enclosed, protective cab of a tracked vehicle, will track close to the tree to be cut, grab the tree via an articulating boom, cut it with an integral chain or blade, and place the cut tree in bundles along skid trails for skidding or forwarding to load on a truck. Trees can be whole-tree skid (branches and top attached) or limbed and bucked in the unit. Limbs and tops could then end up concentrated at landings, near the decked logs, or left in treatment units. The disadvantage of this type of operation is that a significant amount of fuels created by timber harvesting (known as activity fuels) are left behind, needing follow-up treatment if objectives for fuels reduction are to be met. On Forest Service lands, the responsibility for slash treatment is left with the Forest Service (though some timber sale or stewardship contracts might require slash treatment by the Purchaser/Contractor).

Follow-up treatment of slash has been affected by chipping of material, burning of slash piles or broadcast burning. Smoke production from burning of this material is a significant issue, as is ensuring any burning operations go through the burn plan approval process, including cooperation with the State of Colorado as regards to meeting air-quality standards.

A relatively new operation in the Pagosa area and elsewhere in North America and Europe has involved removal of both small and large trees designated for cutting and any associated slash from the site. In the local case, this material has been chipped on or near the site of the cut tree, with chips forwarded by a wheeled vehicle to a landing for trucking off site. These chips are intended for burning, via gasification, to create electricity. Operations elsewhere have involved chipped material burned for heat and power, or used to create pellets for pellet stoves (commercial or personal-use applications).

These types of operations are preferred over conventional logging because minimal activity fuels remain on the site, vastly improving opportunities for follow-up prescribed burning. Observations made of one treatment area on the Pagosa Ranger District found that post-treatment fuel loading amounted to approximately 3 to 4 tons per acre. In contrast, conventional operations (leaving small diameter trees, tops, limbs on site) would be expected to result in post-treatment loading of 25 to 45 tons per acre. Smoke production from follow-up prescribed burning in these biomass-utilization units is expected to be a fraction of that produced from conventional treatments. Prescribed burning “windows” would be greatly expanded as well. It is to be noted that this type of operation is relatively expensive to conduct. But when compared to the costs of conventional logging plus the additional costs of needed follow-up, or from suppression efforts tied to wildfire of untreated stands, this type of operation is highly desired.

Other opportunities for treatment include using service contracts for thinning using chipping machines for mastication, thinning by Forest Service crews, and removal of materials by holders of personal-use firewood permits. Another option is burning without first doing mechanical treatment, but such burns are harder to control.

### **Prescribed Burning and Wildland Fire for Ecosystem Benefit**

There are two key means by which to use fire to affect changes in the forested environment. Prescribed fire involves trained crews igniting and sustaining fire, either in the form of burning of concentrated fuels (piles) or broadcast over a wide area. Lightning-caused fires can be evaluated and then managed over time to meet ecological objectives in what the Forest Service terms wildland fire for resource benefit.

**Prescribed Fire – Concentrations:** Burning of concentrations, usually in the form of piles created by dozers, is normally simple and easy to accomplish. Care must be taken in the creation of the piles (normally overseen by contract administrators) so that there is ample space between burning piles and residual trees. Due to the concentration of fuels, fire intensity is high, duration is typically lengthy, and smoke creation is usually heavy. Pile burning is normally done when the ground between the piles is wet or snow covered to mitigate those factors. There is often a limitation on how many piles can be burned per day to limit smoke production because smoke dispersal is usually not good when there is snow cover. Follow-up weed treatment is usually necessary after burning piles.

**Prescribed Fire – Broadcast:** Broadcast burning can range from relatively simple to very complex, depending on fuels, weather, control lines, and resources. When broadcast burning is used on the Pagosa Ranger District, it is almost always at lower elevations. Ninety-five percent of the time it is in ponderosa pine or warm-dry mixed-conifer forests. Ponderosa pine is highly adapted to fire. The lower-elevation forests where ponderosa pine is the dominant tree, the species evolved with high-frequency, low-intensity surface fires.

Most broadcast burns are conducted by firefighters on foot, using drip torches to ignite strips of unburned vegetation and fuels. A larger version, a power torch can be mounted on an ATV for use on gentle terrain that is relatively free of obstacles to cover more ground, quicker, than could be done by people on foot. It can also be used in

combination with people on foot with drip torches in mixed terrain. An even larger type of power torch can be mounted on a helicopter to ignite large areas.

Another helicopter-mounted device, a plastic sphere dispenser (PSD), sometimes referred to as a “ping pong ball machine,” has been used to ignite fires across about 3,000 acres in the Piedra Area over the last four years. Plastic spheres containing potassium permanganate are injected with ethylene glycol (antifreeze) as they are ejected from an aircraft. After a delay of about 20 seconds a chemical reaction causes the plastic spheres to ignite. An advantage of this technique is that the spheres readily drop through tree crowns to the forest floor below.

Control lines are critical with any type of broadcast burning. Control lines can be roads, skid trails, “handline” dug with typical fire-fighting tools, streams, or even snow-covered slopes. Most broadcast burning is done in the spring, fall, or early winter.

**Wildland Fire for Resource Benefit (WFRB):** Recent policy changes by the US Forest Service have provided for much greater flexibility in the management of fires started by lightning. All fires, regardless of their ignition source or location, fall under “management to meet multiple objectives.” Objectives could be protection of property or archeological structures, or WFRB. In essence, a “natural” fire start can be managed to allow for, or foster, the natural process of fire in forest environments and the resulting effects. This is only allowed where the Forest Service has evaluated the potential for allowing fire to realize ecosystem benefits while not compromising critical values. As an example, WFRB would not be allowed in critical watersheds, near developed private lands (unless agreements are established with private land owners who support WFRB), or in critical wildlife habitat.

Where allowed, a variety of tactics could be used to “manage” a lightning-caused fire. For example, a control line might be established on one side of a fire, with comprehensive burnout in that area to establish a wide buffer of burned ground, while allowing the fire to spread in the opposite direction towards a wilderness area. These fires are closely monitored. Special teams are often brought in to manage these fires. The Rio Blanco “Wildland Fire Use” event in June and July 2005 was handled in this manner.

**Tree Cutting versus Burning:** It is important to recognize a key distinction between mechanical treatments and prescribed fire when it comes to affecting mixed-conifer forests. Mechanical means provide for actual selection of individual trees to be cut. In contrast, fire is generally a “coarse” means of killing trees in a stand. No matter how well the burn plan is designed, there is no certainty that the trees intended to be eliminated will burn or those desired to be retained will survive.

**Indirect Effects of Treatments on Larger Areas:** There is a recognized need to reintroduce fire on the landscape – to reset fire as a natural disturbance component following 135 years of fire exclusion. Cutting or removing trees can have positive effects beyond the direct treatment areas. Treatment units that are well-placed on the landscape can serve as buffers enabling wider use of wildland fire for resource benefit. On the Pagosa Ranger District, most private lands lie at the lower elevations, roaded networks

are generally most extensive in the lower and mid elevations, and roadless or wilderness areas often lie at the highest elevations or in the most remote areas. Forest restoration and fuels reduction treatments in the roaded landscape can provide buffering between people and property below and roadless and wilderness above. In this way, natural fire starts from lightning within or above these treatment areas can be managed with far more confidence than if treatments had not occurred. Treatment areas also provide for reduced habitat for tree diseases or insect outbreaks. Hence, goals for forest restoration, forest health improvement and fuels reduction can be realized on an expanded scale beyond the net-affected acres that have undergone thinning and burning.

### **Restrictions on Treatments**

A wide range of treatment options should be available where existing roads provide access. But there are areas where road access or harvesting (that is, utilization of wood products from the Forest) is not allowed or intended to occur on the Pagosa Ranger District. Wilderness areas are off-limits for any motorized road access or harvesting. Similarly, the Roadless Area Conservation Rule prohibits new road construction or reconstruction or timber harvest in any inventoried roadless areas (IRAs).

Mechanized thinning or harvesting is usually not appropriate in many other special areas or unique landscapes such as wild and scenic river corridors, research natural areas, and most archeological areas. There are some exceptions like the Chimney Rock Archeological Area (CRAA) where some forest health/restoration and fuels reduction treatments have occurred. In those instances, invasive Rocky Mountain juniper was cut and removed from the understory of stands of pre-EuroAmerican-settlement ponderosa pine, followed by prescribed burning. If highly valued areas, like CRAA, are identified as needing treatments, relatively small, discrete treatment units can often be managed to meet objectives fully compliant and supportive of the unique area or landscape in question.

### **Constraints on Treatments**

There are numerous issues that can hamper treatments in the mixed-conifer landscape. Some are obvious, such as lack of implementation funding. Other not-so-obvious or widely-known constraints can include:

- lack of support by locals or persons of influence (potentially resulting in appeals to project decisions, or lawsuits to prevent action);
- lack of implementation resources, which in addition to funding shortfalls, can be the void of personnel and equipment to affect thinning or burning;
- lack of opportunity “windows”, such as tight parameters on weather or fuels conditions that, repeatedly, are not met or occur to allow the burning treatment to take place; and
- administrative constraints, such as “stand-down” periods for prescribed burning (as may occur when prescribed fires elsewhere in the state escape control boundaries) or funding restrictions (e.g., fuels treatment funds must be used in WUI-designated lands).

## Strategies for Management

While there are differences and complexities within mixed-conifer forests among cool-moist, warm-dry, and aspen-with-conifer, there are some general objectives and approaches that can be utilized to affect improved conditions. These actions are a matter of varying emphasis depending on site-specific conditions rather than choosing one restoration approach to the exclusion of the others. On a landscape scale, for instance a watershed of 20,000 acres, a broad range of management actions will be utilized.

At the most general level, a preferred management approach would meet the purpose of creating a “disturbance” that has the broad goal of returning the mixed-conifer landscape to its more natural conditions. Priority for creating such disturbances would occur in those parts of the landscape that have departed most significantly from their natural functions and processes. Disturbances can be mimicked using either mechanical treatments or prescribed fire.

- Mechanical treatment: Thinning, or thinning with removal, of some vegetation is one approach that can be used to decrease the density of tree stands. This involves selectively cutting one or more of the species present. It may, for instance, result in creating larger openings in an area where the stands have become denser than the historical range. Removing vegetation may result in improvements in other ecological functions, such as wildlife habitats discussed below.
- Proper role of wildfire: Due to the exclusion of fire over the past century, its natural role has not been allowed to function. This deficit can be addressed by the use of natural fire when it occurs in situations where risks can be managed appropriately. Prescribed burns can also be utilized within the limits of smoke tolerance and community acceptance. Because of these limitations, employing “managed fire” is heavily dependent on weather conditions.
- Habitat improvement and maintenance: Ecological evidence has been presented that indicates that trends in mixed-conifer forests with regard to wildlife habitat are outside of the historical range. These show that additional use of fire and mechanical treatments would create vegetation openings and conditions that improve or maintain environments for a range of animal and bird species.
- Insects and disease: Drought and related bark beetle responses, coupled with ongoing disease conditions, are placing stress on much of the mixed-conifer landscape. Overly dense stands have resulted in an abundance of host habitat for defoliators as well as other insects and disease. Carefully monitoring insects and disease should be a part of strategic vegetation management in mixed-conifer forests.
- Watershed management: Some areas within the mixed-conifer landscape play a primary role in terms of their water resources. Certain streams are used intensively for recreation, while others are of exceptional importance because they provide municipal water to surrounding communities. Watershed values are

ranked highly by the public and therefore should play a strong role in selecting areas for treatment.

- WUI protection: Scattered along the lower-elevation margin with the mixed-conifer zone are a variety of communities and subdivisions. The Archuleta County Community Wildfire Protection Plan (CWPP) identifies much of the privately-owned land in the county as being in the wildland-urban interface. Likewise, the Hinsdale County CWPP has identified a sizable portion of the upper Piedra River area, which includes numerous moderate-to-large private-land in holdings, as high priority for treatment. This means that important management benefits can be realized by working through public-private collaboration to achieve mutual benefits in catastrophic wildfire risk reduction.
- Economic development: Increasing the economic efficiency of forest restoration can enhance improvements in ecological conditions and wildfire mitigation. Much in the way of potential wood products that can be removed from the forest – and should be removed to meet restoration objectives – do not currently reflect values to offset the cost of removal. Nevertheless, whatever value can be gained through utilization will assist in offsetting the cost of ecological improvements. An example of enhanced utilization, as demonstrated by a biofuels demonstration project on the Pagosa Ranger District in 2010, has been expanded to include much of the lower- and middle-elevation forests surrounding the Pagosa Springs/Archuleta County community via a long-term stewardship contract. Efforts like this, designed at an appropriate scale, will improve economic sustainability of small- and medium-size wood products businesses and employment.

### **Forest Vegetation Management – Past, Current and Future**

The Pagosa Ranger District has been actively managing the forested environment for many decades, with timber management plans dating back to the 1920's. Timber harvesting reached its peak in the 1970's, greatly due to meeting demands of the San Juan Lumber sawmill (formerly located east of Pagosa Springs). And, the Pagosa Ranger District was one of the first ranger districts in the Rocky Mountain Region to implement prescribed – broadcast – burning, beginning in the 1970's.

In recent years, timber harvesting has dropped off significantly, due in part to a) loss of wood products industry infrastructure, b) stricter environmental regulations and/or environmental-associated lawsuits, or c) reduction in appropriated funding for active management. Two other significant factors have further hampered treatment efforts. The mountain pine beetle epidemic in the Central and Northern Rockies has led to extensions of local existing timber sale contracts to enable urgent removal of deteriorating timber elsewhere in Colorado or Wyoming. And the severe economic downturn since 2008 has resulted in the lowest timber product values for over 40 years, with only tepid recovery projected in the near future.

Nevertheless, treatments have been occurring on the Pagosa Ranger District and much is planned for the future. Since 2002, the following treatments have occurred on the District.

- thinning: 2,720 acres;
- product removal (mostly fuelwood): 1,175 acres;
- mastication of understory trees or shrubs: 5,481 acres;
- piling of slash: 400 acres; and
- prescribed burning (broadcast or piles): 6,840 acres.

Of the total acres shown above, an estimated 68% was accomplished in the ponderosa pine cover type, about 28% in warm-dry mixed-conifer, and about 4% in cool-moist mixed-conifer.

Approximately 19,000 acres on the Pagosa Ranger District have undergone environmental analysis and are authorized for mechanical treatment. In addition, approximately 18,000 acres are authorized (or soon to be) in plans for prescribed burning. It is important to note that the Pagosa Long-Term Stewardship Contract was recently awarded. It is expected that about 1,400 acres of mechanical thinning will occur on an annual basis over the 10-year life of this contract. Followup prescribed burning is expected to follow soon after thinning in most of the contract area.

***Attachment C -*      Communications and Outreach  
Committee Plans**

# Upper San Juan Mixed-Conifer Working Group

## Communication Plan

July 5, 2012

**Draft**

This document is a living plan and is being finalized and refined.

#### Contacts:

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## **BACKGROUND**

Mixed-conifer stands are the most complex forest type found in Southwestern Colorado. In southwestern Colorado it typically is found between lower-elevation, ponderosa pine-dominated forests and higher-elevation spruce-fir forests. Mixed-conifer forests generally occur at elevations from 7,500 to 10,000 feet. At lower elevations and on warmer aspects the dominant tree species are ponderosa pine, white fir, and Douglas-fir. At higher elevations or on cooler aspects, white fir, aspen, blue spruce, and Douglas-fir are present; slightly cooler/higher still, Engelmann spruce and subalpine fir begin to be observed. (Southwestern white pine bridges the gap – it is found at higher elevations but on warm, sunny aspects.) There are approximately 250,000 acres of mixed conifer on the San Juan National Forest, mostly located on the Pagosa Ranger District. Timber harvest is thought to be feasible on about 45,000 of these acres.

Due in part to the exclusion of fire, mixed-conifer landscapes that were once open and dominated by fire-tolerant species have become densely forested by small shade-tolerant, fire-susceptible trees. Most of the lower-elevation mixed conifer (termed warm-dry mixed conifer) is considered to be outside its historic range of variation. The Forest Service has been limited in its ability to shift current conditions back to more desired conditions due to a lack of markets for wood products coupled with a lack of funding to affect management actions.

Local forest stakeholders and the Pagosa Ranger District of the San Juan National Forest (SJNF) have formed the collaborative **Upper San Juan Mixed-Conifer Working Group** for the purpose of sharing diverse stakeholder perspectives and developing priorities for management of mixed-conifer forests over the next 2-10 years. A stakeholder-based effort was initiated in 2009, beginning with a “state of the science” workshop hosted by the Pagosa Ranger District of the SJNF and the Colorado Forest Restoration Institute (CFRI). Eighty-two local and regional stakeholders participated in the two-day workshop in October 2009. It was a significant step forward to focus on the mixed-conifer zone because the majority of collaborative work over the past 15 years has addressed ponderosa pine.

Building on the workshop, a core group of participants is in the process of formally initiating a collaborative Upper San Juan Mixed-Conifer Working Group to invite broader stakeholder participation and seek to develop shared priorities for future management in the mixed conifer forest type. Specifically, they are interested in:

- Sharing and strengthening our understanding of appropriate methods of maintaining and increasing health and resiliency in the mixed-conifer landscape;
- Broadening our knowledge of current conditions, conservation needs, and opportunities;
- Developing a set of restoration approaches, actions, and projects;
- Initiating projects that address high priority needs and opportunities for restoration.
- Establishing follow-up monitoring methods to guide adaptive management.

## COMMUNICATION GOALS AND OBJECTIVES

The primary goals of this communication plan are to provide information to the public about the ecological importance and unique characteristics of mixed conifer forests in southwest Colorado, share information on the current state of forest conditions after over a century of fire suppression, inform the public about measures necessary to protect ecological integrity, and invoke understanding and a desire on the part of the visiting public to support these protective measures. The communication goal includes providing information to internal Forest Service audiences and stakeholder groups.

The objectives used to meet these goals include the following:

- Educate about the unique qualities and historic range of variation of conditions of mixed conifer forests;
- Create awareness that current forest conditions are not in a natural state;
- Communicate that future trends indicate that current state of the forest and trajectory towards unmanaged wildfire could be catastrophic for local communities and economies;
- Prepare communities for and increase awareness of forest resilience and what actions are necessary to move towards a condition of resilience;
- Generate discussion and dialog regarding potential actions and treatment options and;
- Activate volunteer groups to aid in education for resource management and monitoring.

## THEMES AND KEY MESSAGES

**Theme 1. Mixed conifer forests in southwest Colorado are a treasured forest environment for this area with valuable wildlife, scenic vistas, and recreation resources. Mixed conifer forests include a complex system of characteristics that are challenging for land owners to understand and manage. The following key messages describe some of these complex and diverse characteristics.**

### **Key Messages:<sup>1</sup>**

- 1.1 Mixed conifer forests have the greatest diversity of tree species of any major forest cover type in southwest Colorado. The understory vegetation found there also has a similarly wide range of diversity.
- 1.2 The diversity of the plant and forest types sets the stage for an equally diverse range of disturbances to affect forest structure over a range of scales across time and across the landscape. These forests are adapted to disturbances such as forest fires, wind, heavy snow damage, and beetle infestations.
- 1.3 Management options, such as thinning and prescribed burn prescriptions, are diverse as well.
- 1.4 SJNF staff have delineated mixed conifer into two forest types – warm-dry and cool-moist – in order to capture key structural and compositional differences on either side of the mixed conifer continuum.

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<sup>1</sup> This information was sourced from primarily *Mixed Conifer Working Group* publications, published by multiple authors including Colorado Forest Restoration Institute, Colorado State Forest Service, Dr. Julie Korb, Dr. Bill Romme, and others, 2001-2011.

- 1.5 Warm-dry mixed conifer typically has a strong ponderosa pine tree component, and a Gambel oak understory component, reflecting adaptation to fires that were relatively frequent and of low intensity.
- 1.6 Cool-moist mixed-conifer often has minimal ponderosa pine and no Gambel oak. These forests were historically characterized by relatively infrequent fire, of highly variable intensity and severity.

**Theme 2. Existing conditions of mixed conifer forests are considered to be outside of their historic range of variation. The past 130 years of forest management has prevented and excluded wildfire from the landscape. Predictions for the future put mixed conifer forests at continued or potentially even greater risk at being outside of historic range of variation. This trend is likely to include uncharacteristic disturbances – particularly damaging wildfire and/or extensive insect epidemics.**

**Key Messages:**

- 2.1 People have noticed changes in mixed conifer forests in our area and are concerned about the further changes that might result from large, intense fires, insect infestations, and smoke associated with wildfires.
- 2.2 Fire suppression and other past management practices have excluded wildfire from the landscape and have resulted in large areas outside of the historic range of variation—known as HRV—in terms of structure, composition and disturbance regimes, especially fire.
- 2.3 Managers are concerned about the current age-/size-class distributions, where forests consist of more older and fewer younger trees of traditional pine species, with resulting increased susceptibility to insect infestations.
- 2.4 Managers are concerned about the increase in trees of shade-tolerant species in the understory, like white fir or blue spruce, that are adapted to dense forested conditions but are susceptible to fire or insects and disease.

**Theme 3. The Upper San Juan Mixed Conifer Working Group was formed to foster collaboration as a tool to share diverse perspectives and develop priorities for management of the mixed conifer forests.**

**Key Messages:**

- 3.1 The way forests are managed affects our entire community. Forest management supports the values and resources that we identify with mixed conifer forests.
- 3.2 San Juan National Forest managers invited input from users, landowners, interested publics, and other entities in how mixed conifer forests should be managed for a diversity of uses and outcomes.
- 3.3 The Upper San Juan Mixed Conifer Working Group develops cooperation in a variety of ways to foster management, including providing information about forest conditions, processes, or potential management actions; potential consequences resulting from management actions; developing monitoring and evaluation methods to promote adaptive management; and finding neighboring landowners to work in concert with in implementation of acceptable treatments.

- 3.4 The Mixed Conifer Group is open to anyone who is interested in forest health and forest management. The group's goal is to collaboratively craft a plan and provide guidance that will assist the USFS in their decision-making related to the mixed-conifer forests for years into the future.

**Theme 4. Some members of the public and land owners are interested in sharing information about forest ecology and management options and wish to participate in the collaborative dialog and to manage their forest resources. The Forest Service and their partners will work to educate users in forest management strategies.**

**Key Messages:**

- 4.1 Despite scientific uncertainties, stakeholders have identified a shared interest in maintaining and improving the health and resilience of mixed-conifer stands to future disturbance and climate change.
- 4.2 Just as the forest environment is dynamic, and new research or project evaluation has the potential to reveal new information, education of stakeholders needs to be ongoing, up to date, and participatory.

**Theme 5. The Forest Service needs assistance and support from partners, community leaders, chambers of commerce, and the media in developing and fostering stewardship and protection activities in the Pagosa Springs area.**

**Key Messages:**

- 5.1 The Forest Service's stewardship work is most successful when supported by a coalition of partners and volunteers. Volunteers provide a valuable resource to the Forest Service and can assist in education and monitoring through participation in a variety of projects. Volunteer opportunities include working on forest monitoring programs and educating community members. If interested in volunteering, please contact **Steve Hartvigsen** at the Pagosa Ranger District at 970-264-1513.

## **COMMUNICATION TOOLS AND STRATEGIES**

The Forest Service and its partners will use a variety of methods to communicate Key Messages. Each tool will be formatted and directed at specific audiences. The Forest Service will also present Key Messages at special activities and events, as possible, throughout the next several years. The basic set of communication tools and special events are outlined below.

### **General Outreach Communication**

- Press release about current problems, management changes, new regulations, and request for volunteers;
- Briefing paper about current problems, management changes, and new regulations;
- Public affairs programming about current problems, management changes, new regulations, and request for volunteers;

- E-mail announcements and general updates with information on management changes, new regulations, and request for volunteers;
- Powerpoint presentation for speakers bureaus and stakeholder groups outlining current problems, management changes, new regulations, and request for volunteers;
- Stakeholder group meetings (participation/presentation);
- Interagency meetings (participation/presentation);
- Update/Contact Websites (USFS, CPW, Recreation user groups, conservation organizations); and
- Update San Juan National Forest and partners Websites with regulatory information, press releases, briefing paper, and powerpoint presentation.

### **"On the Ground" Outreach Communication**

- Educational pamphlet for distribution on-site and at key locations;
- Homeowners guide to what to expect for forest ecology, fire regimes, and forest management
- Interpretive signs at project on-site locations.

### **Special Activities and Events**

- Public Lands Day
- Solicit community groups adopt a monitoring project
- Interpretive walks/tours in mixed conifer forests, including treated areas

## KEY AUDIENCES

Diverse user groups and land owners in the mixed conifer zone create a wide variety of communication audiences and messages. The variety runs from the general public recreation users, agency personnel, land owners, and stakeholders who are intimately familiar with the area. The table below lists specific audiences targeted by the Forest Service to receive communications on mixed conifer management issues. It includes specific audiences and the communication tools and messages targeted at that audience. Please refer to the chart on the next page

Audience		Communication Tool	Key Message Themes*
<b>Internal</b>			
Forest Service employees on the San Juan national forests, including line officers, Renewable Resources, Lands and Recreation staff, Public Affairs officers, Special Use administrators, law enforcement officers, and front line administrators.		Briefing paper, Powerpoint presentation	Theme: 3, 4, 5
Regional Directors of Renewable Resources, Wilderness, Recreation, and Public Affairs.		Briefing paper, Powerpoint presentation	Theme: 2, 3, 5
<b>External</b>			
Pagosa Springs, Archuleta County residents		Press Release to local media, Public affairs programming, tours	Theme: 1-5
Local Governments & Organizations of Influence			
	Pagosa Springs Archuleta County	Press Release, Briefing Paper, email, powerpoint presentation, tours	Theme: 1-5
	Pagosa Area Water and Sanitation District	Press Release, Briefing Paper, email, powerpoint presentation, tours	Theme: 1-5
Businesses & industry organizations			
	Real estate agents Colorado Timber Industry Association	Pamphlet distribution point, Flyer/Poster highlighting lessons for homeowners, powerpoints, tours	Theme: 1-5
Conservation organizations			
	Rocky Mountain Wild San Juan Citizens Alliance San Juan RC&D	Press Release, Briefing paper powerpoint presentation, Group Meetings, tours	Theme: 1-5
Recreational user groups			
	Day users: equestrians, ATVs, hikers, anglers, hunters	<b>On-Site</b> Kiosks, Interpretive Signs, Pamphlet, Flyer <b>Off-site</b> – Flyer/Poster/pamphlet at local retail and USFS contact stations	Theme 1-3, 5
	Recreational organizations	Briefing Paper, email, powerpoint presentation, tours	Theme 1-3, 5
	Campers: all of above	<i>Same as above,</i>	Theme 1-3, 5
Home Owners Associations		Pamphlet distribution point, Flyer/Poster highlighting new regulations, powerpoints	Theme: 1-5
			Theme: x

## ACTION PLAN IN TABLE FORMAT (NEXT PAGE)

**Please note: This action plan, as of July 2012, is currently in process. The entity(ies) or person(s) responsible for each strategy as well as funding and overall timelines are being finalized. Please check the Web site for updates to this plan:**

<http://ocs.fortlewis.edu/mixedconifer/outreach-minutes.htm>

<b>Audience</b>	<b>Objectives</b>	<b>Strategies</b>	<b>Measurements</b>	<b>Priority</b>
<b>Media</b>	Increase awareness of MCWG, efforts, opportunities for participation	Secure a news story, annually, in each newspaper in the corridor ( <i>Pagosa Sun, High Country News, Durango Herald, Telegraph</i> )	# of news stories and locations	High
		TV		
<b>General Public</b>	To give people knowledge that this work is being done and why; to give credit/ credibility to the MCWG	Signage at “communication centers”	# of signs	Medium
	Educate on forest issues	Brochures		
Businesses	Recruit Volunteers	Newsletter		
Homeowners Associations		Website	Hits	
Tourist businesses		News articles	#, Locations	
Outfitter/guides		Presentations-speakers to stakeholder groups	#, Locations	
		Outreach at events	Materials distributed	
-Others				
		Volunteer Projects	Volunteers engaged	
		Web site postings		

<b>Audience</b>	<b>Objectives</b>	<b>Strategies</b>	<b>Measure-ments</b>	<b>Priority</b>
	-To disseminate lessons learned (BMPs) and to seek ideas/ opinions/ etc.	Create forum for lessons learned within MCWG?		
	-To ensure that those IN the partnership can access scientific information	Tamarisk Symposium/ Research Conference		
		Forest-Water USFS Training	Participants	High
<b>MCWG Members</b>	-Continued support and awareness	Bi- Annual Meetings	# participants	High
	-Word of mouth outreach opportunities	Newsletter, Website		High
	-Monitoring volunteer program	Engage new subcommittee members at MCWG meetings	# of new members	High