

Uncompahgre Plateau Project
January 18–19, 2005
8:00 – 4:30 p.m.
Delta USFS Supervisor's Office
Delta, Colorado

Objective/Purpose

Purpose of the meetings: Complete and refine the landscape analysis and analysis of disturbance regimes on the entire Plateau using research (Romme et.al) and local specialists' knowledge to develop a landscape-level profile of the historic range of variation (HRVs) in each of the major vegetation types.

Objective: Identify the major vegetation communities, depict their locations on a map of the Plateau, and quantify the ranges of patch and seral conditions and the locations on the landscape by plant community on the remaining 3 quadrants of the Plateau.

Uses: The map and descriptions serve as the basis for landscape level planning for vegetation management. It is step one in the following process:

1. Identify the major vegetation types and develop a landscape-level profile of the HRVs in each of them (i.e. quantify the ranges of patch sizes and seral stages).
2. Develop a list of the mosaic drivers/modifiers based on management objectives (i.e. WUI)
3. Prioritize the drivers and modifiers for areas with overlap
4. Develop specific mosaic profiles for these objectives
5. Compare the presumed HRV ranges with existing conditions (seral stage/patch size)
6. Identify areas with departures from the HRV

Presentations Jan. 18:

Amanda Clements (BLM): Introduction and overview of the framework for analysis and outline for the process used in the mosaic group work. To obtain a copy of Amanda's presentation or for more information on the mosaic group work, please contact Amanda directly at amanda_clements@co.blm.gov

William Romme (CO State University) & Kevin McGarigal (University of Massachusetts): Overview of their research on historic range of variation (HRV) modeling – i.e. condition classes and successional pathways in major vegetation types – on the Uncompahgre Plateau Region, SW Colorado. (RMLands model). Handouts of Romme and McGarigal's work are available at the USFS. For copies of the handouts please contact John Moore at jmoore06@fs.fed.us or if you desire more information on this research, you can contact the researchers at romme@CNR.colostate.edu and mccgarigalk@forwild.umass.edu or visit their website at www.umass.edu/Landeco go to RMLANDS link and then go to RMLANDS Applications link.

William Baker (University of Wyoming): Overview of his research on historical range of variability on the Uncompahgre Plateau: Pinyon–Juniper and Sagebrush. Handouts of Bill's presentation are available as well through John Moore jmoore06@fs.fed.us or Bill Baker at bakerwl@UWYO.edu

Karen Eisenhardt (University of Colorado): Amanda Clements presented on Karen's research on fire history in the Pinyon Juniper on the Uncompahgre Plateau. For more information, please contact Amanda directly at amanda_clements@co.blm.gov

Amanda Clements (BLM): Review of mosaic tables created for SE quadrant of the Uncompahgre Plateau. Overview of quantification process used in evaluating SE quadrant.

Presentation Jan. 19:

Barry C Johnston, USFS: Overview of the federal directives for assessing Fire Regime Condition Class (FRCC). FRCC employs three levels to characterize the condition of vegetation relative to the number of historic fire regime cycles it has missed: FRCC1 is fairly close to a historic fire regime and is not at risk for adverse affects from fire. FRCC2 is moderately off on its historic fire regime and is at moderate risk for adverse affects from fire. And FRCC3 is significantly off on its historic fire regime and is at high risk for adverse affects from fire. The GMUG has developed a model called vegetation dynamics development tool (VDDT) which is a scaled derivative of the federal historic range of variation modeling.

Groups self selected based on their knowledge of vegetation types and elevational ranges (see results of group work below). The groups spent

the remainder of the two days creating mosaic profiles for the SW quadrant of the Uncompahgre Plateau and portions of the NW quadrants.

RESULTS FOR SW QUADRANT FROM EACH OF THE 3 GROUPS:

HIGH ELEVATION

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT):SW
QUADRANT – SPRUCE/ FIR/ ASPEN

Developed by: Dan Huisjen, Craig Grother, Eric Brantingham, Tim Garvey, Mac Fellin, Ron Turley, Peter Barth, John Moore.

Written Description of Unit: Spruce/fir and Spruce/fir/aspen stands in the SW Quadrant. The stands are linear in nature from NW to SE at the highest elevations of the Plateau. These are generally in a narrow band running across the mid-high elevations of the Plateau from NW to SE. At the lower elevations spruce/fir/aspen grades into the aspen climax. It may be difficult to determine the 'boundary' between these two during some seral stages.

Likely Pre-suppression Fire Regime and Mosaic: Fires were generally small to medium in size and occurring infrequently in the UR (understory regeneration) and SM (shifting mosaic) stages as fuels accumulate and become available during long-term drought. Fire orientation is across the vegetation type so most fires burn across the narrow distance of the vegetation and are subsequently small to moderate in size as they move across it to the top of the Plateau. Most of the disturbance comes from below. Some of the disturbance is fire, but more influence from disease and insects. Insect disturbance operate generally on a small to medium patch size, blow-down is typically small.

Desired Mosaic: Mosaic is small to medium patch sizes in the early seral stages and coalesces into larger patch sizes in the SE (stem exclusion) and then into 'matrix' in the UR. Not much reaches the SM (shifting mosaic), except those stands that are 'hidden' from disturbance either topographically or uphill from aspen stands. Stem initiation (SI) ranges from 0-20%, depending on extent of disturbance and may reach very near to 0% during some periods of time.

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT)SW
QUADRANT – ASPEN CLIMAX

Developed by: Dan Huisjen, Craig Grother, Eric Brantingham, Tim Garvey, Mac Fellin, Ron Turley, Peter Barth, John Moore.

Written Description of Unit: Pure aspen stands (climax) in the SW Quadrant. These are generally in a narrow band running across the mid-high elevations of the Plateau from NW to SE. The upper edge of this type grades into the spruce/fir/aspen mosaic above it and the 'boundary' between these two may not be identifiable during some seral stages.

Likely Pre-suppression Fire Regime and Mosaic: Infrequent, generally low to moderate intensity with rare high intensity (3-4' flame length) fires capable of killing portions of these stands. These fire events are generally small to moderate in size due to the typical moisture present in the soils and in the understory fuels at this elevation. The lower stand edge would be influenced by fires burning up slope from below (starting in the ponderosa pine/oak and even lower in the pinyon/juniper vegetation types). Most insect and disease occurs in later seral stages.

Desired Mosaic: Larger patches in the later seral stages and small patches in the younger seral stages. Stands tend to grow together (conglomerate) over time.

MID ELEVATION

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT) SW QUADRANT - HIGH ELEVATION PINYON-JUNIPER/SHRUBLAND

Developed by: Amanda Clements, Harley Metz, Steve Shrock, Art Stevens, Allan Stahle, Bill Day, Glenn Webb, Bill Baker.

Written Description of Unit: "Ring of Fire" - Combines RMLands Pinyon-juniper woodland and pinyon-juniper oak serviceberry woodland.

Likely Pre-suppression Fire Regime and Mosaic: High intensity fire, infrequent, >400 year return interval-Karen Eisenhart. Cheatgrass complicating factor. Pinyon decline widespread, which is having an impact now. Eisenhart shows fire more common in higher elevation PJ (implies this end of PJ elevation range will be skewed toward earlier seral stages than lower elevation PJ). Romme states RMLands vegetation classification splits out the PJ into several classes like PJ. Eisenhart has 40% of sites >300 yrs around Nucla area, draft RMLands has about 10-25% in these old age classes, but this may reflect preliminary status of analysis. Baker and Shinneman not evaluated PJ age data by quadrant, but

across Plateau long rotation and old woodland. Fire map shows more fire in this quadrant relative to whole Plateau. Anecdotal information that lightning strikes in mid PJ zones are ones that take off. Base our numbers mostly on Eisenhart data. How to handle grasslands/montane grasslands—grasslands in our zone are all adjoining or surrounded by shrub or oak—is the RMLANDS montane grassland referring to open parks up on top. We increase grass forb % from 1 to 5% to reflect inclusions that are naturally grasslands interspersed through this vegetation type.

Patch sizes—The fire occurrence map is likely to show natural distribution of patch sizes, even Burn Cyn fire, especially PJ portion, ponderosa portion may not have burned as extensively except for euroam intervention. Pinyon decline—successional impacts variable, could further in some areas, set back in others. Small patches also created by drought, decline, beetles, as well as single-few tree fires. Size ranges based on typical small, mid and large disturbances, eg 100 ac fire could still go out. >100 acres will probably really spread. Patch sizes initially based on fire size distribution for quadrant, minus some of Burn Canyon acreage.

Desired Mosaic: Note that the % numbers shown below are guidelines, intended to be used within +/- 5 to 10%. They may not necessarily add up to 100% as shown.

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT) SW QUADRANT - PONDEROSA/OAK WOODLAND

Developed by: Amanda Clements, Harley Metz, Steve Shrock, Art Stevens, Allan Stahle, Bill Day, Glenn Webb, Bill Baker.

Written Description of Unit: “Ring of Fire” – Combines RMLands Pinyon-juniper woodland and pinyon-juniper oak serviceberry woodland.

Likely Presuppression Fire Regime and Mosaic – High fire activity, complex fuel mix. Most fire starts are in upper PJ. Oak was probably always part of what’s there. Fire may have occasionally kept oak repressed. Numbers based on RMLANDS. Grazing reduced low intensity fires—Webb speculation—disrupted early/late season cool fires. Frequent low intensity fire may repress oak, based on prescribed burn experience. Glen thinks mix of fire-maintained open +mixed intensity fire regimes resulted in a lot of mosaic. Fire intervals would be such that they sustain both ponderosa and oak. Oak characteristics—production seems to relate to soil characteristics. Logging has probably contributed to amount of

oak in current day stands. In quadrant, not many pine stumps left but those that were fairly large diameter for Colorado. Historically probably more grass to carry fire, probably more frequent cooler fires. Oak gets fire up to ponderosa crowns. Oak probably increases flammability on patches of the landscape—often triggered by spring hard frosts. Garvey-oak and pine spatially separated typically where oak will dominate small patches, pine others. Moisture in quadrant improves regeneration of pine, so probably more of stage 5 than 6. Don't often get discrete small stands (e.g. 40+ acres) – very fine scale pattern instead. Because of patchiness, heterogeneity of fuels probably not going to get huge fire/patch events.

Desired Mosaic: Note that the % numbers shown below are guidelines, intended to be used within +/- 5 to 10%. They may not necessarily add up to 100% as shown.

Patch Size

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT) SW QUADRANT – MOUNTAIN SHRUB

Developed by: Amanda Clements, Allan Stahle, Bill Day, Craig Grother, Tim Garvey, Barry Johnston.

Written Description of Unit: “Ring of Fire”– From Mountain shrubland class in RMLands.

Likely Presuppression Fire Regime and Mosaic – Floyd-Romme, Mesa Verde oak fire return interval 100–150 years. Assume moderate size patches based on fire behavior. Tends to burn flashy, short duration “1 afternoon events”, high intensity fire but because shrub fuel moistures are so responsive to humidity changes, tend not to smolder, or make numerous runs. Fires tend to burn patchily, underburning and fuel moisture drive this patchiness. This based on observations of fires burning in this vegetation type. Other natural disturbances like drought or heavy browse influence might enable pinyon pine invasion, probably only an impact at lower ecotone. Frost damages oak, tent caterpillars and other insects also damage. Frost and caterpillar impacts substantial to oak, Grother 100 acres+ caterpillar kill. Repeated frosts have top killed oak. Smaller frost diebacks more frequent, larger ones rarer. Heavy browsing can impact shrub species composition, and height structure—based on assumptions, but also evidence from herbivore exclosures in region. Herbivore impacts probably could cause shrub to grass type conversion. Fire in this quadrant in oak—lots of fine fuels generally—lots

of fuels in this type—lead to hot fall fires. Fire behavior similar to SE. Crown fire behavior, flashy. This belt of oak on steeper slopes, se facing in this quadrant. Gets lots of browsing/grazing from wildlife, which modifies structure—keeps shrubs hedged, suppressed to some extent. Did stands used to have more serviceberry, mahogany, and more open prior to heavy grazing? Rollerchopping seems to release serviceberry/mahogany. Numbers in part based on RMLands.

Desired Mosaic: Note that the % numbers shown below are guidelines, intended to be used within +/- 5 to 10%. They may not necessarily add up to 100% as shown.

LOW ELEVATION

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT):
SW QUADRANT - LOW ELEVATION SAGEBRUSH GRASSLAND

Developed by: Bob Welch, Peggy Lyon, Danguole Bockus, Jim Garner, Stu Krebs, Bruce Krickbaum, Jim Dollarshell.

Written Description of Unit: Low elevation sagebrush grassland areas in the SW Quadrant. This area, which runs from Mailbox Park to Third Park, up to Mesa Creek and down to Dry Creek Basin, is characterized by level terrain and moderately deep soils. The upper edge of this type grades into pj/sagebrush woodland above it. The sagebrush in this area is not a seral stage in the pj/sagebrush woodland, but rather a climax community. There is little to no pj encroachment, with lots of the area covered by sagebrush clumps that are small and fragmented.

Likely Pre-suppression Fire Regime and Mosaic: Infrequent, generally fast and hot - or moderate to high intensity fires. These fire events are generally wind-driven events that are small to moderate in size (5-200 acre patches). When fires occurred, could be limited by patch size. Fires start in adjacent PJ shrubland. Some insect and/or drought can kill shrubs - primarily in the early seral stage. Prairie dogs can perpetuate early seral stages. Some potential for cheatgrass invasion or dominance, following disturbance - especially fire.

Desired Mosaic: Maintain existing stands, encourage regeneration, establish grass-forb understory and promote structural and age diversity. More focus on improving condition of stands rather than on seral stages or patch sizes.

VEGETATION MOSAIC OBJECTIVE (UNIT #/NAME /QUADRANT)

SW QUADRANT – PJ /SAGEBRUSH WOODLAND

Developed by: Bob Welch, Peggy Lyon, Danguole Bockus, Jim Garner, Stu Krebs, Bruce Krickbaum, Jim Dollarshell.

Written Description of Unit: Low elevation woodland areas in the SW Quadrant, including pinyon–juniper woodland, sagebrush parks, sage–grass, grass–forb, juniper/grass and pj–sage communities. This area includes Mailbox Park and Third Park, south of Nucla, and Naturita Canyon and Broad Canyon. This area has scattered, fairly dense patches of PJ, with large sagebrush areas.

Likely Pre–suppression Fire Regime and Mosaic: Very little fire evidence in much of the lower edge of this zone. Some fire snags evident on edge of sage parks (Karen E. observation). There are probably some structural stages with the same timing of stages as high elevation P/J. Type is more dissected than high–elevation PJ and at a lower precipitation zone. The early successional stages are probably more persistent than in high elevation PJ because of less precipitation and drier conditions that lead to slower recovery rates. Probably lots of fire starts, but not many of the fires became large – probably scarce in 4th and 5th stages because of fuels arrangements that make it difficult for fire to carry (Dan Huisjen observations from New Mexico). If there are repeated overturns in earlier stages, some patches would likely cycle back through early stages, others will escape into stem exclusion/infill stages, with large chunks of the landscape left in older successional stages. There probably are more medium–sized patches than in high–elevation PJ, primarily dictated by topographic constraints and lack of fuels with a low precipitation environment. Drought and insects probably cause a shifting dominance to juniper in low–elevation PJ, but this shift probably does not really affect the structural or seral stages of the juniper.

Desired Mosaic: Maintain existing stands, encourage regeneration, establish grass–forb understory and promote structural and age diversity. This is important deer winter range and potential sage grouse habitat.