December 5, 2012

NEW MEXICO INTERAGENCY ESD CORE GROUP MEETING

Agency Report for the USDA Forest Service-Southwestern Region

I. Integrated Landscape Assessment Project (ILAP): http://oregonstate.edu/inr/ilap

The ILAP project was a two-year ARRA project, completed in 2012, which created about 50 jobs to work on watershed-level prioritization of land management actions based upon the conditions of ecosystems, fuels, wildlife and other attributes. Some results:

a. Region-wide map of major ecosystems types (ecological response units).
b. Region-wide maps of existing vegetation, structure and composition, of sufficient detail to inform dynamical modeling and watershed-scale decisions.
c. A decision support framework to help make the best use of available information to support watershed-level prioritization of fuel treatments. The module contains the spatial data, VDDT, and EMDS modules to help inform mid- to-broad-scale landscape prioritizations of land management actions by planners, land managers and policy makers.
d. Sky Island Focus Landscape: multi-agency working group to apply the models to southern Arizona specifically addressing vegetation dynamics, insects, treatment scenarios and wildfire in response to climate change (MC1).

II. RMAP-Regional Riparian Mapping: 2011 riparian corridor map of all 5th code HUC's that intersects NFS lands. Goal was to provide planning teams with continuous and consistent spatial data at the map scale of 1:12,000, with a legend of 24 potential vegetation themes. Thematically the data is 81% accurate. Spatially the data has 3% rate of commission error.

a. The mapping process built upon existing TES/TEUI riparian data and enhanced the mapping from 1:24000 to 1: 12000. Also, mapped areas not currently covered by TEUI.

III. Terrestrial Ecological Unit Inventory (TEUI) Program (AZ & NM)

a. Release of the Valles Caldera National Preserve TEUI/Soil Survey to the science staff. A cross-walk was built between NRCS ESD vegetation communities, Muldavin's existing vegetation classification map, and the TEUI plant associations and subseries. A total of 39 ecological types for 59 ecological units are being reported. Final data migration of all point data will be completed in December.

b. **Continue TEUI activities on the Gila NF.** Approximately 310,000 acres were described, classified and mapped; primarily in the non-wilderness areas. The remaining wilderness TEUI data collection and mapping will be in FY-2013.

c. Plan TEUI project initiation in FY-2014 on the **Lincoln NF**, focus on the Guadalupe Mts.

d. **Tonto National Forest TEUI:** -Mapped 181,253 acres in FY 2012. Will complete mapping the Tonto NF in FY 2013 (approximately 97,000 acres remain). There is an increased emphasis on describing ecosystems that have departed from reference conditions due to fire (state and transition). The manuscript and database will be completed in FY 2014. Collect forage data in grasslands and graminoid dominated understory ecological types.

e. **Coronado National Forest TEUI:** Mapped 138,150 acres in FY 2012. Completed a total of 382,582 acres since FY 2009. Expected completion of mapping is 2017. Focusing on describing ecosystems that have departed from reference conditions due to fire, insects and grazing (state and transition).Collect forage data in grasslands and graminoid dominated understory ecological types.

f. Completed a prototype ecological site description for the upper montane stratovolcano terrestrial ecosystem (attached).

g. Completed a white paper (draft) addressing the criteria and background for effective litter as is measured and recorded on ecological sites.

h. Added to the ecological site description process a data element to account for standing dead biomass. Sampling will also focus on areas undergoing 'changed condition assessments'; specifically sampling in burned areas to tool the S & T models.

i. Reviewed two ESD's from AZ-NRCS; PIPOS/QUGR3 and Volcanic Uplands.

j. Two presentations were delivered at the WRCSSC in Davis, CA (TEUI & FS approach to ESD's). One presentation about the TEUI program at the Region 8 MLRA NCSS meeting in Phoenix, AZ

k. Continued the cross-referencing and correlation of NRCS ESD's to FS ecological sites during TEUI progress field reviews on the Coronado, Tonto and Gila NF's (attached).

IV. Rangeland Inventory, Monitoring and Assessment Program

a. Conducted webinar with the Northern Region (R1) on how TEUI is being used as the basis for ESD's in rangeland analysis for NEPA.
b. Co-hosted three Rangeland Monitoring Workshops in Globe, Sonoita and Flagstaff, AZ. Emphasized the importance of using ESD's as the framework towards developing a rangeland monitoring program.
c. Rangeland I, M & A program support to the Lincoln and Apache-Sitgreaves NF's for grazing NEPA and forage availability post-Wallow fire.

IV. Climate Change Vulnerability Project: A vulnerability assessment for ecosystems at the water scale, using a rating system of low, moderate, or high, based on the anticipated changes to site potential for Southwest plant communities from climate change. The project is scheduled for completion is 2012, and uses TEUI as a knowledge base from which to generate environmental envelopes for comparison against down-scaled spline climate data. Tabular and spatial reports will convey vulnerability for each 6th-code watershed, and for each major ecosystem within the watershed.

V Carbon Assessment Project - set w/ Wayne to tie to RaCa

Productivity Crosswalk Between Ecological Type Plot Data and NRCS - ESD (Historic Climax Plant Community)

FS/ESD	Plant Community Name	Tree Species (#/% Comp)	Shrubs & Vines (#/% Comp)	Forb Species (#/% Comp)	Graminoid Species (#/% Comp)	Total Plant Species (#/% Comp)	Forage Production (lbs/ac)	Surface Components						
								BA	Li	SR	RO	BS	NVP	Total
47 0.1	QUEM/JUDE2/FAPA/BOCU	5/6.3%	16/20.3%	36/45.6%	22/27.8%	79/100%	610	1.8%	40.0%	51.0%	0.0%	15.0%	0.0%	107.8%
	Total Canopy Cover	51.0%	23.0%	0.5%	21.3%	95.8%								
FO41XA112AZ	QUEM/QUAR/BOCU/LEDU	12/5.2%	40/17.4%	132/57.4%	46/20.0%	230/100%	485-2300	4-16%	50-80%	11-75%	0-0%	0-45%	0-0%	65-216%
	Total Canopy Cover (Range)	20-57%	0-13%	3-32%	21-61%	44-163%								
360 0.1	PLMU3/ERLE	0/0%	3/7.7%	16/41.0%	20/51.3%	39/100%	1480	5.3%	0.0%	69.0%	0.0%	25.7%	0.0%	100.0%
	Total Canopy Cover	0.0%	2.7%	23.5%	34.7%	60.9%								
RO41XA126AZ	PLMU3/PAOB	2/0.7%	30/10.6%	185/65.1%	67/23.6%	284/100%	566-1630	----	----	----	----	----	----	----
	Total Canopy Cover (Range)	----	----	----	----	----								
414 0.1	ERLE/BOHI2/BOGR2	0/0%	7/11.9%	32/54.2%	20/33.9%	59/100%	2170	16.0%	0.0%	55.1%	0.0%	28.9%	0.0%	100.0%
	Total Canopy Cover	0.0%	1.0%	2.1%	43.2%	46.3%								
RO41XA110AZ	BAPT/BOCU/BOGR2	4/1.3%	31/10.0%	190/61.5%	84/27.2%	309/100%	1082-2217	10-22%	25-65%	5-20%	0-0%	10-40%	1-6%	51-155%
	Total Canopy Cover (Range)	0-6%	0-6%	1-21%	36-81%	37-114%								
430 0.1	QUEM/JUDE2/QUTO2/MUEM	5/5.0%	17/16.8%	57/56.4%	22/21.8%	101/100%	2380	6.4%	5.0%	57.5%	30.0%	2.0%	T	100.9%
	Total Canopy Cover	19.4%	17.7%	11.5%	42.0%	90.6%								
RO41XA111AZ	QUEM/JUDE2/ERWR/NOMI/BOCU/ERIN	7/2.0%	71/20.0%	205/57.7%	72/20.3%	355/100%	461-1330	8-19%	25-70%	18-65%	0-5%	5-20%	0-2%	56-176%
	Total Canopy Cover (Range)	5-18%	2-25%	2-30%	17-65%	26-138%								

Crosswalk Between TEUI and NRCS ESD Soil Information

FS/ESD	ESD Soil Series	Cochise County, AZ, Douglas-Tombstone Part, 2003 Soil Survey	Soil Classification	FS/ESD Precip (cm)	ESD-OSD Precip (cm)	Soil Depth
47 0.1	----	----	Fluventic Haplustepts, HSM 4,-1, sandy-skeletal, mixed, thermic	48	----	Deep
FO41XA112AZ	Hayhollow	Yes	Aridic Ustifluvents, coarse-loamy, mixed, superactive, nonacid, thermic	41-51	41-51	Deep
	Rafter	Yes	Cumulic Haplustolls, loamy-skeletal, mixed, superactive, thermic	41-51	41-51	Deep
360 0.1	----	----	Aridic Argiustolls, HSM 3, 0, fine, smectitic, thermic	43	----	Mod Deep
RO41XA126AZ	Cherrycow	Yes	Aridic Argiustolls, fine, smectitic, thermic	41-51	41-51	Mod Deep
	Cloverdale	No	Torrertic Argiustolls, fine, smectitic, thermic	41-51	36-51	Deep
414 0.1	----	----	Typic Argiustolls, HSM 4,-1, clayey-skeletal, mixed, superactive, thermic	48	----	Deep
RO41XA110AZ	Crowbar	Yes	Aridic Haplustalfs, loamy-skeletal, mixed, superactive, thermic	41-51	41-51	Deep
	Gardencan	Yes	Aridic Haplustalfs, fine-loamy, mixed, superactive, thermic	41-51	41-51	Deep
	Terrarossa	Yes	Aridic Paleustalfs, fine, mixed, superactive, thermic		41-51	Deep
430 0.1	----	----	Typic Argiustolls, HSM 4,-1, loamy-skeletal, mixed, superactive, thermic	53	----	Mod Deep
RO41XA111AZ	Bomain	No	---	----	----	----
	Castledome	No	Aridic Haplustalfs, clayey, mixed, superactive, thermic	41-51	41-51	Shallow
	Collarbutton	No	Aridic Lithic Argiustolls, loamy, mixed, superactive, thermic	41-51	41-51	Shallow
	Kuykendall	Yes	Aridic Lithic Argiustolls, clayey, smectitic, thermic	41-51	41-51	Shallow
	Virgus	No	---	---	----	----

Ecological Type Name: Vitrandic Eutrudept, HSC 6,+1, ashy-skeletal, glassy, frigid, deep, gravelly sandy loam; 40-80% slopes; ABCO/PSMEG/POTR5-Edaphic Climax Class.

Distribution: This ecological type is described, classified and identified as a major component within two map units, Map Unit 686 in the Gila National Forest, Glenwood, Reserve and Wilderness Ranger Districts; and Map Unit 680 in the Cibola National Forest, Magdalena Ranger District, San Mateo Mountains. The components make up 50% or more of each map unit. There are a total of 20,519 acres of this ecological type identified in the two national forests. Polygon size ranges from 9 to 1739 acres. Slope ranges from 40 to 80 percent.

National Hierarchical Framework of Ecological Units: This ecological type occurs within Land Type Association (LTA) Typic Dystrochrepts, frigid LSC 6, deep, extremely cobbly sandy loam; PSMEG-Edaphic Climate Class (GTES Map Unit 479). Lab data has indicated soils have a higher base saturation classifying them as Eutrudepts. This LTA falls within the M313 Ae: Mogollon Mountains Coniferous Forest Subsection, M313A: White Mountain-San Francisco Peaks-Mogollon Rim Section; M313:Arizona-New Mexico Mountains-Semi Desert-Open woodland-Coniferous Forest-Alpine Meadow Province, 310: Tropical/Subtropical Steppe Division, 300: Dry Domain. (4)

Location of the Ecological Type: A typical ecological type is map unit component 686 .1. It is located on the U.S.G.S Grouse Mountain Topographic Quadrangle near the center of Section 4, T. 11 S., R. 18 W. UTM coordinates are N. 3694538, E. 713143 in the Glenwood District of the Gila National Forest.

Landscape: The landform on which this ecological type occurs is a stratovolcano that has been modified through faulting.

Past Relict Geomorphic Landform (3)

Geomorphic Process:	Volcanic	**Landform:**	Stratovolcano
Geomorphic Subprocess:	Constructional	**Common Landform:**	Mountain Slope

Current Dormant Geomorphic Landform (3)

Geomorphic Process:	Tectonic	**Landform:**	Fault Block
Geomorphic Subprocess:	Faulting	**Common Landform:**	Mountain Slope

Geologic Formation: (1)

Geologic Formation:	**Turf**-Silicic flows and masses and associated pyroclastic rocks **Turp**-Upper Oligocene rhyolite and pyroclastic rocks (ash flow tuffs)
Parent Material-Kind:	Residuum and Colluvium
Parent Material:	Rhyolite and Tuff

Surface Morphometry:

Slope Range:	40-80%	**Mean Elevation meters:**	2800
Mean Slope:	60	**Slope Complexity:**	Simple
Higher Elevation Aspect:	Southeast, Southwest	**Slope Shape_Horizontal:**	Linear, Convex
Lower Elevation Aspect:	Northeast	**Slope Shape-Vertical**	Linear
Elevation Range meters:	2600-3000	**Mountain Slope Position:**	Mountain Sideslope

Soils: Vitrandic Eutrudept, HSC 6,+1, ashy-skeletal, glassy, frigid. This is a brown, deep ashy (sandy loam)- skeletal (>35% rock fragments), somewhat excessively drained soil formed in colluvium and residuum from rhyolites and tuffs. The surface texture is gravelly sandy loam containing 12% clay and 25% rock fragments mostly of gravel size. The diagnostic surface horizon is an ochric epipedon approximately 8 cm thick which is overlain by approximately 8 cm of Oi and Oe horizons. The diagnostic subsurface horizon is a weak cambic horizon that extends from 16 to 46 cm. It is a very gravelly sandy loam texture with approximately 8% clay. The substratum extends from 46 to 109 cm and is a loamy sand texture. Bedrock commonly occurs below 100 cm but within 150 cm of the soil surface. The control section is between 33 and 108 cm. Average clay is 2% and rock fragments average 58%. Soil pH is neutral

in the upper part and moderately acid in the lower part of the soil profile. The soil moisture regime is udic and the soil temperature regime frigid.

Typical Soil Pedon Description:

Oi 0-3 cm; Partially decomposed needles, twigs, leaves and cones.

Oe 3-8 cm; Moderately decomposed needles, twigs, leaves and cones.

A 8-16 cm; very dark gray (7.5YR 3/1) gravelly sandy loam, black (7.5YR 2.5/1) moist; weak very fine granular structure; soft, very friable, non-sticky, non-plastic; 25 percent gravel, trace cobble; many very fine, common fine, few medium roots throughout; neutral pH (6.8); clear smooth boundary.

Bw 16-46 cm; brown (7.5YR 5/2) very gravelly sandy loam, dark gray (7.5YR 4/1) moist; weak fine subangular blocky structure; soft, very friable, non-sticky, non-plastic; 50 percent gravel, 8 percent cobble; many very fine, common fine, common medium, common coarse roots throughout; neutral pH (6.6); clear wavy boundary.

C1 46-89 cm; pinkish gray (7.5YR 6/2) very gravelly loamy sand, brown (7.5YR 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, non-sticky, non-plastic; 55 percent gravel, 2 percent cobble; many very fine, common fine, common medium, common coarse roots throughout; moderately acid pH (5.8); clear wavy boundary.

C2 89-109 cm; light brown (7.5YR 6/3) extremely gravelly loamy sand, brown (7.5YR 4/3) moist; massive; soft, very friable, non-sticky, non-plastic; 60 percent gravel, 5 percent cobble; many very fine, common fine, few medium, few coarse roots throughout; strongly acid pH (5.4); abrupt wavy boundary

R 109 cm; Hard rhyolite bedrock.

Potential Natural Vegetation: ABCO/PSMEG/POTR5-Edaphic climax Class. This plant community is characterized by a mixed conifer overstory consisting *of Abies concolor, Pseudotsuga menziesii var. glauca with Populus tremuloides* being poorly to well represented. In mature plat communities, tree canopy cover ranges from 75 to 90 percent. The absence to occasional presence of *Pinus ponderosa var. scopulorum and Picea engelmannii* distinguishes this plant community from similar subseries.

Shrubs are poorly to well represented with canopy coverage ranging from 1 to 10 percent. *Holodiscus dumosus, Symphocarpos oreophilus, Lonicera arizonica, Rubus parviflorus, Acer glabra* and *Clematis columbiana* dominate the shrub layer. Forbs are diverse but usually consist of less than 5 percent canopy cover. Graminoids are poorly represented. Graminoids occurring in this ecological type are *Bromus ciliatus, Trisetum spicatum, Carex species, Koleria macrantha* and *Poa fendleriana*.

Potential Plant Community: ABCO/PSMEG/POTR5-Edaphic Climax Class.

Trees	% CC	Shrubs	% CC	Ave. Ht. in.	Forbs	% CC	Ave. Ht. in.	Graminoids	%CC	Ave. Ht. in.
ABCO	35	HODU	4	48	GOOB2	T	4	BRCI2	.1	21
PSMEG	45	SYOR2	2	22	FRVIV	.2	3	CAGE	.2	8
POTR5	3	RUPA	.3	10	CHUM	T	5	KOMA	.3	14

PIST3	P	CLCOC	.2	3	MARA7	.1	12	POFE	.2	12
SASC	P	ACGL	.2	8	PYROL	T	3	TRSP2	.2	14
PIPOS	P	LOAR	.2	4	CORAL2	T	6			
PIEN	P	RONEN	P	36	PSMO	T	14			
		QUGA	P	---	OLRI	P	---			
		RIBES	P	---	VICA	.1	3			
		PHMO4	1	16	PEBA	P	---			
					OXALI	P	---			
					PACA	P	---			
					PTERI	P	22			
					LALA3	.1	7			
					GERI	T	9			
					PLATA	.2	20			
					LIPO	.1	7			
					THFE	.2	16			
					VIAM	T	4			
					ACMI2	P	---			
					GORE	T	4			
					HEUCH	T	12			
					CEAR4	T	4			
					VAAR3	.2	3			
					ERIGE2	.5	8			
					SEER2	P	---			
Total CC	83		6.9			1.2			.9	
Species no.	7		9			24			5	

Other Classifications for this Plant Community:

Series: White Fir (9)
R3 Plant Associations: ABCO/SYOR, ABCO/MARE11, ABCO/ACGL, ABCO/EREX4 (9)
Dominance Type: ABCO_PSME (8)
Other Plant Association Classifications: ABCO-PSME/ACGL, HODU Phase (5)

Ground Cover: Ground cover consists of surface rock, litter, basal area and cryptogams. The dominant surface cover in this ecological type is litter with surface rock at times co-dominant. Litter is composed of dead leaves, needles, twigs, cones and down woody material. Litter is considered cover when it occurs at a thickness of approximately 1 cm. Surface rock includes gravel, cobble, stones and boulders. Basal area of vegetation is usually less than 1% cover. Bare soil is typically less than 2%.

Cover Type	% Cover
Rock Outcrop	0
Rock Fragments	45
Bare Soil	1
Litter	75
Basal Area	1

Cryptogams	0
Overstory	78
Overstory Ht.	3 m

Coarse Woody Material:

Size Class	No. of Pieces	Size Class	No. of Pieces
<3	26,000+	9-11	2
3-5	10	11-13	1
5-7	3	13-15	1
7-9	4	>15	1

Forest Species Size Class, Diameter at Breast Height (DBH):

DRC Size Class	ABCO			PSMEG		
	Number of Plants	%Canopy Cover	Average Height ft	Number of Plants	%Canopy Cover	Average Height ft
<0.9"	1	T	2	5	1	4
1.0-4.9"	2	1	2	2	2	8
5.0-8.9"	---	---	---	3	4	45
9.0-11.9"	---	---	---	3	8	55
12.0-17.9"	2	14	77	4	20	86
18.0-23.9"	4	21	76	---	---	---
>24.0"	---	---	---	1	10	89

DRC Size Class	POTR5		
	Number of Plants	%Canopy Cover	Average Height ft
<0.9"	24	1	3
1.0-4.9"	---	---	---
5.0-8.9"	---	---	---
9.0-11.9"	1	2	49
12.0-17.9"	---	---	---
18.0-23.9"	---	---	---
>24.0"	---	---	---

Site Index and Basal Area:

Species	ABCO	PSMEG	POTR5
Site Index	78	89	52
Basal Area ft^2/acre	50	60	10

Understory Production lbs/acre/yr:(9)

Herbaceous /Woody	Forage	Forage Maximum
250	25	3300

Climate: This ecological site is associated with upper elevation mixed conifer, Life Zone 6 of the High Sun Cold gradient. Abundant cover of both *Abies concolor* and *Pseudostuga menziesii* and the absence of *Pinus ponderosa* indicates that this ecological type occurs within the cool, moist phase (+1) of the mixed conifer life zone. (9) It is defined by seasonal distribution and amount of precipitation and mean annual air temperature. (9) Approximately 60% of the annual precipitation occurs during the high sun period between April 1 and September 30. Mean annual precipitation is approximately 60 cm. Winter precipitation falls mostly in the form of snow. Mean annual snow fall is approximately 90 inches. Snow occurs during the period between October and March with amounts ranging from 1 inch in May to 19 inches in December and January. Approximately 13 inches of snow persists for most of the winter months. (14)

Summer precipitation in the form of rain occurs during the months of July, August and September. Summer precipitation originates primarily from the Gulf of Mexico but can also originate from remnants of hurricanes in September. May and June are typically the driest months. The approximate average number of wet days during the year is 86 days.(14)

A dominant overstory of *Abies concolor* and *Pseudostuga menziesii* , indicates a frigid soil temperature regime and a udic soil moisture regime. The mean temperature during the low sun period is -1.4 degrees Celsius. Mean annual air temperature is 14.6 degrees Celsius with an average minimum of -9.4 degrees Celsius in December and an average maximum temperature of 24.2 degrees Celsius in July. Freezing temperatures are common from September through mid June. Freezing temperatures occur mainly at night and early morning during April, May, June, September and October. The freeze free period ranges from 80 to 100 days.(10)

Greer Arizona NOAA Climate Station best reflects the climate of this ecological site. Greer is located at a similar elevation and latitude as where this ecological type is located.(14)

GREER, ARIZONA

Period of Record General Climate Summary - Temperature

Station:(023683) GREER

From Year=1904 To Year=2011

	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd yyyy or yyyymmdd	F	dd yyyy or yyyymmdd	F	-	F	-	= Days	= Days	= Days	= Days
January	41.7	15.1	28.5	65	30 1971	-24	06 1971	36.1	2003	23.3	1979	0.0	4.2	30.4	2.6
February	43.5	17.4	30.4	78	21 1918	-21	05 2011	36.7	1996	22.3	1964	0.0	2.7	27.2	1.3
March	48.3	21.3	34.8	75	21 2004	-15	05 1966	41.0	1921	28.4	1964	0.0	1.2	29.0	0.4
April	56.1	28.6	42.3	92	09 1917	-4	02 1975	47.3	1959	35.0	1983	0.0	0.2	24.0	0.0
May	65.2	35.4	49.3	89	26 1925	8	01 1967	58.8	1996	45.7	1965	0.0	0.0	13.5	0.0
June	74.6	40.8	57.7	99	30 1974	24	07 1925	62.4	1974	53.1	1965	0.0	0.0	2.3	0.0
July	75.8	47.3	61.5	90	15 1925	33	09 1926	64.4	2009	53.7	1926	0.0	0.0	0.0	0.0
August	72.6	46.4	59.5	87	27 1997	30	27 1926	63.0	1997	55.6	1965	0.0	0.0	0.0	0.0
September	65.1	40.5	54.5	86	01 1916	20	15 1916	59.1	1997	50.5	2006	0.0	0.0	1.9	0.0
October	59.9	30.9	45.5	78	01 2010	6	30 2009	49.4	1979	39.9	1964	0.0	0.1	17.9	0.0
November	50.0	22.7	36.5	74	09 1950	-13	30 2006	42.2	1999	29.9	1972	0.0	1.2	27.6	0.3
December	42.5	18.2	29.3	65	20 1917	-20	09 1978	36.5	1917	24.4	1997	0.0	3.5	30.2	1.9
Annual	58.2	29.9	44.1	92	19170409	-24	19710106	46.2	1996	42.3	1957	0.0	13.4	204.0	6.5
Winter	42.6	18.2	29.4	78	19150221	-24	19710106	34.2	1951	25.5	1979	0.0	10.7	87.5	5.8
Spring	56.5	27.1	41.8	92	19170409	-15	19660505	46.7	1959	37.6	1973	0.0	1.4	66.5	0.4
Summer	74.3	44.9	59.6	90	19230715	24	19250607	62.1	1994	57.5	1957	0.0	0.0	2.3	0.0
Fall	59.5	31.5	45.5	86	19160901	-13	20061130	45.6	1999	42.9	1972	0.0	1.3	47.4	0.3

Table updated on Jul 12, 2012

For monthly and annual means, thresholds, and sums.
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

GREER, ARIZONA

Period of Record General Climate Summary - Precipitation

Station: (023683) GREER

From Year=1904 To Year=2011

	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd yyyy or yyyymmdd	= Days	= Days	= Days	= Days	in.	in.	-
January	1.54	5.65	1962	0.12	1998	2.30	01/1907	6	4	1	0	18.7	58.0	1962
February	1.44	4.54	1958	0.00	2002	1.84	25/1915	6	4	1	0	16.7	66.0	1987
March	1.53	4.50	1905	0.00	1972	2.50	31/1908	6	4	1	0	16.3	48.5	1991
April	0.84	3.70	1905	0.00	1913	1.20	01/1905	4	3	0	0	6.1	31.0	1933
May	0.70	5.55	1992	0.00	1951	1.40	06/1978	4	2	0	0	1.3	12.0	1908
June	0.84	3.68	1972	0.00	1906	1.75	03/1915	4	2	0	0	0.2	8.2	1915
July	4.25	9.01	1921	0.92	1995	2.32	22/1999	16	11	3	1	0.5	38.5	1922
August	4.39	10.76	1987	0.94	1962	2.27	24/1992	16	11	3	1	0.0	0.0	1904
September	2.05	6.26	1983	0.00	2000	5.38	03/1994	8	5	1	0	0.1	3.0	1961
October	1.77	7.20	1972	0.00	1909	3.25	14/1916	5	4	1	0	2.5	29.0	1961
November	1.22	5.51	1978	0.00	1904	2.10	02/1974	5	3	1	0	9.1	40.5	1964
December	1.76	7.07	1967	0.00	1917	2.41	09/1961	6	4	1	0	18.8	99.0	1967
Annual	22.35	36.56	1983	13.74	1989	5.38	19940903	86	57	13	3	90.4	205.0	1961
Winter	4.74	16.09	1962	0.40	2006	2.41	19611209	17	12	3	1	54.2	155.0	1962
Spring	3.06	8.30	1905	0.25	2008	2.50	19050331	15	9	2	0	23.8	77.0	1953
Summer	9.48	18.09	1987	4.20	2009	2.27	19910824	36	24	6	1	0.7	6.2	1915
Fall	5.07	11.43	1953	0.55	1953	5.38	19940903	18	12	3	1	11.7	72.0	1961

Table updated on Jul 12, 2012

For monthly and annual means, thresholds, and sums.

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Similar Ecological Types: Other ecological types occur with the same vegetation classification but differ by having a different soil classification, parent material and or slope range. Differences in soil water holding capacity, soil particle size, soil depth, nutrient pools, organic matter content and natural erosion rates can have an effect on site productivity resulting in a different ecological type. Other similar mixed conifer types differ in the absence or presence of other species.

Examples of similar Ecological types:

Vitrandic Eutrudepts, HSC 6,+1, ashy-skeletal, glassy, frigid, deep, gravelly sandy loam; 15-40% slopes; ABCO/PSMEG-Edaphic Climax Class.

Vitrandic Argiudolls, HSC 6,+1, ashy- skeletal, glassy, frigid, moderately deep, cobbly sandy loam; 40-80% slopes, ABCO/PSMEG-Edaphic Climax Class.

Vitrandic Eutrudepts, HSC 6,0, ashy, glassy frigid, moderately deep, cobbly sandy loam; 40-80% slopes, ABCO/PSMEG/PIPOS/QUGA-Edaphic Climax Class.

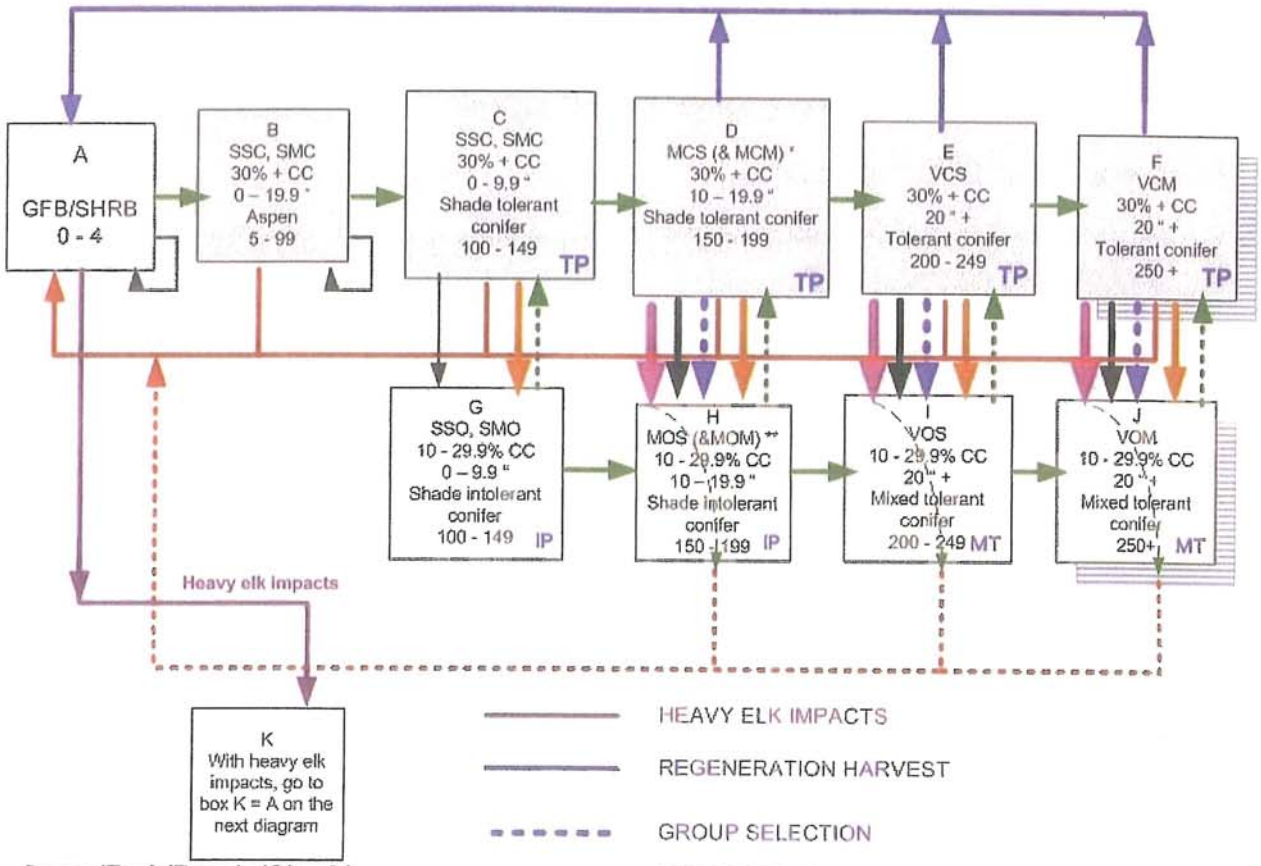
Typic Hapludalfs, HSC 6,+1, loamy-skeletal, mixed, superactive, frigid, deep, very cobbly sandy loam; 40-80% slopes; ABCO/PSMEG/POTR5-Edaphic Climax Class.

Associated Ecological Types: This ecological type occurs in map unit complexes with:

Vitrandic Hapludolls, HSC 6,+1, ashy-skeletal, glassy, frigid, deep, gravelly sandy loam; 40-80% slopes; ABCO/PSMEG-Edaphic Climax Class. Rock outcrop and rubble land also occur with this ecological type where mapped.

Disturbance/Treatment: Fire frequency in a mixed conifer ecological type varies but ranges from 30 to 100+ years.(6,15) This ecological type is considered by some as being a moist mixed conifer type having a longer fire interval within the range. Insect infestations, disease and drought are other natural disturbances. The steep slopes and less than 5% cover of forbs and graminoids excludes this ecological type from most other kinds of disturbance such as grazing and timber management. Below is a state and transition model for a moist mixed conifer vegetation classification. It is based upon vegetation over a wider range of slope gradients and soil types than assigned to this ecological type.

Mixed Conifer Infrequent Fire (With Aspen and Without Elk), April 1, 2010, page 1 of 2



HEAVY ELK IMPACTS

REGENERATION HARVEST

GROUP SELECTION

COMMERCIAL THIN

NATURAL SUCCESSION

SUCCESSION WITH TIME SINCE DISTURBANCE

SURFACE FIRE; OR THIN AND/OR RX BURN

INSECT AND DISEASE

STAND REPLACING FIRE

STAND REPLACING FIRE FOLLOWING FUEL BUILDUP

MIXED SEVERITY FIRE

Grass/Forb/Brush (Shrub)
A. (GFB/SHR) Characteristic
K. (GFB/SHR) Uncharacteristic
Seed/Sap_Open (SSO)
Seed/Sap_Closed (SSC)
Small_Open (SMO)
Small_Closed (SMC)
Medium_Open_Single (MOS) **
Medium_Closed_Single (MCS) *
Medium_Open_Multi (MOM)
Medium_Closed_Multi (MCM)
V. Large_Open_Single (VOS)
V. Large_Closed_Single (VCS)
V. Large_Open_Multi (VOM)
V. Large_Closed_Multi (VCM)

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* MCS includes MCM in this PNVT
**MOS includes MOM in this PNVT

IP = Intolerant Plurality

MT = Mixed Tolerant Plurality

TP = Tolerant Plurality

Abies concolor is less resistant to fire than *Pseudostuga menziesii*. (14) It is less likely to survive after fire and or repeating fire over shorter fire intervals. *Pseudostuga menziesii* is more likely to survive and dominate the stand. *Abies concolor* is not as drought tolerant as *Pseudostuga menziesii* and dies out during extended periods of drought. Drought also makes *Abies concolor* more susceptible to disease and insect mortality. After high intensity stand replacing fire, *Populus tremuloides* resprouts, resulting in stands dominated by this species.(10) Over time, with no fire recurrence, *Populus tremuloides* provides shade which favors the reestablishment of shade tolerant *Abies concolor* and *Psuedostuga menziesii*.

Wildlife Use: (6,15)

In general, big game use is greatest in early to mid-successional stands because valuable shrub forage species' cover is reduced by shading in late successional stands. Elk browsing (or lack thereof) can greatly influence shrub development. Big game typically browse Rocky Mountain Douglas-fir in the winter or early spring when other preferred forage is lacking. Mule deer browse it more than elk do. Douglas-fir browse is not highly nutritious. Its energy and protein value are rated as fair. Mule deer are especially fond of succulent, new white fir growth in the spring. Spring browsing of white fir by deer can be particularly heavy when small white firs are the only green food available; all of the current or previous year's growth may be consumed. During the winter, mice feed on the leaders of small white firs near snow level. In the spring, they feed on seedlings, sometimes destroying a large proportion of the current year's seedlings. Pocket gophers also feed on white fir seedlings in the winter and spring. Chipmunks, mice, voles, and shrews eat large quantities of conifer seeds from the forest floor and clipped cones are a staple and major part of storage of red squirrels. These animals store a large amount of cones or seeds. Seeds are also eaten by birds including grouse, chickadees, crossbills, and Clark's nutcracker.

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