CHAPTER 2. EXISTING VEGETATION – FOREST SCALE

San Juans

Current Vegetation

Vegetation mapping for the Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forests is generated primarily from aerial photo interpretation, with periodic updates resulting from field verification, management activities and natural disturbances (i.e., wildfires). Vegetation is classified by cover type. Cover type is determined by the dominant cover or species present at the time of classification. As a result, cover type classifications are more simplified than conditions that actually occur on the ground. (For example: Spruce/fir cover type includes areas where Englemann spruce and/or subalpine fir tree species are the majority of the vegetation. Aspen tree species may or may not be present as subdominant species.)

Current vegetation cover type composition on NFS lands within the San Juans Geographic Area is shown in Figure 1. Vegetation is currently dominated by spruce/fir and aspen forests transitioning into open alpine meadows and bare/rock areas above timberline. A map of current vegetation is shown in Figure 2.

Figure 1. Composition of Current Vegetation Cover Types on NFS lands within the San Juans Geographic Area

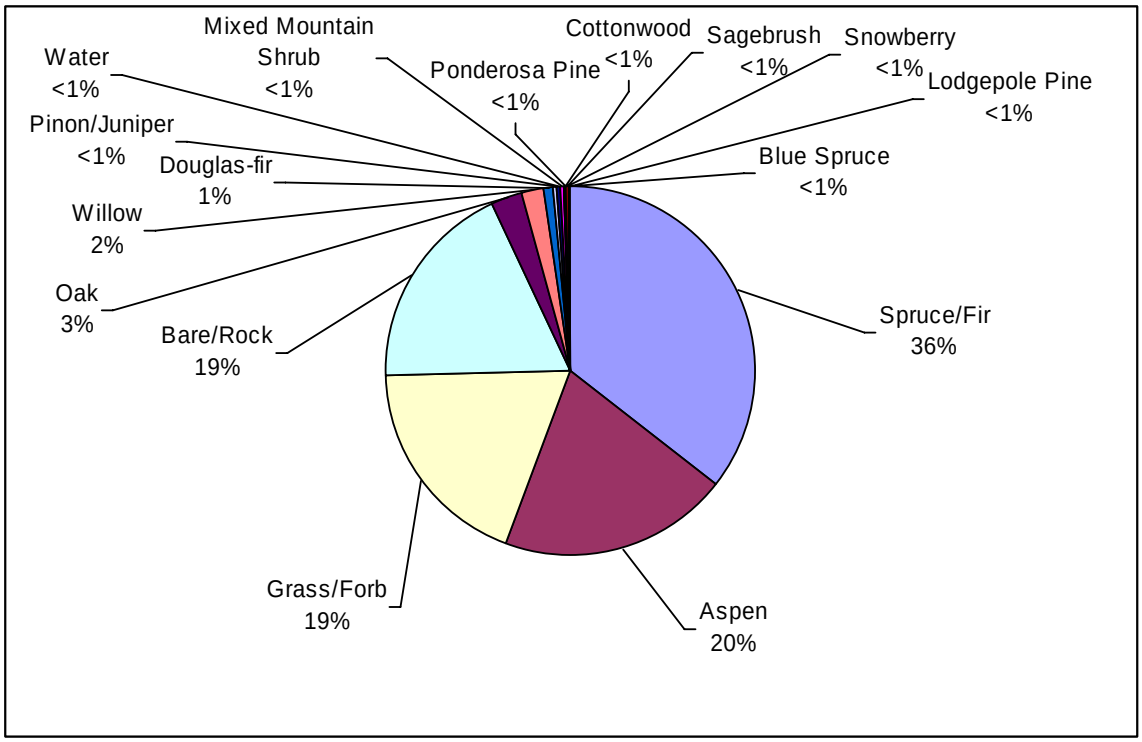
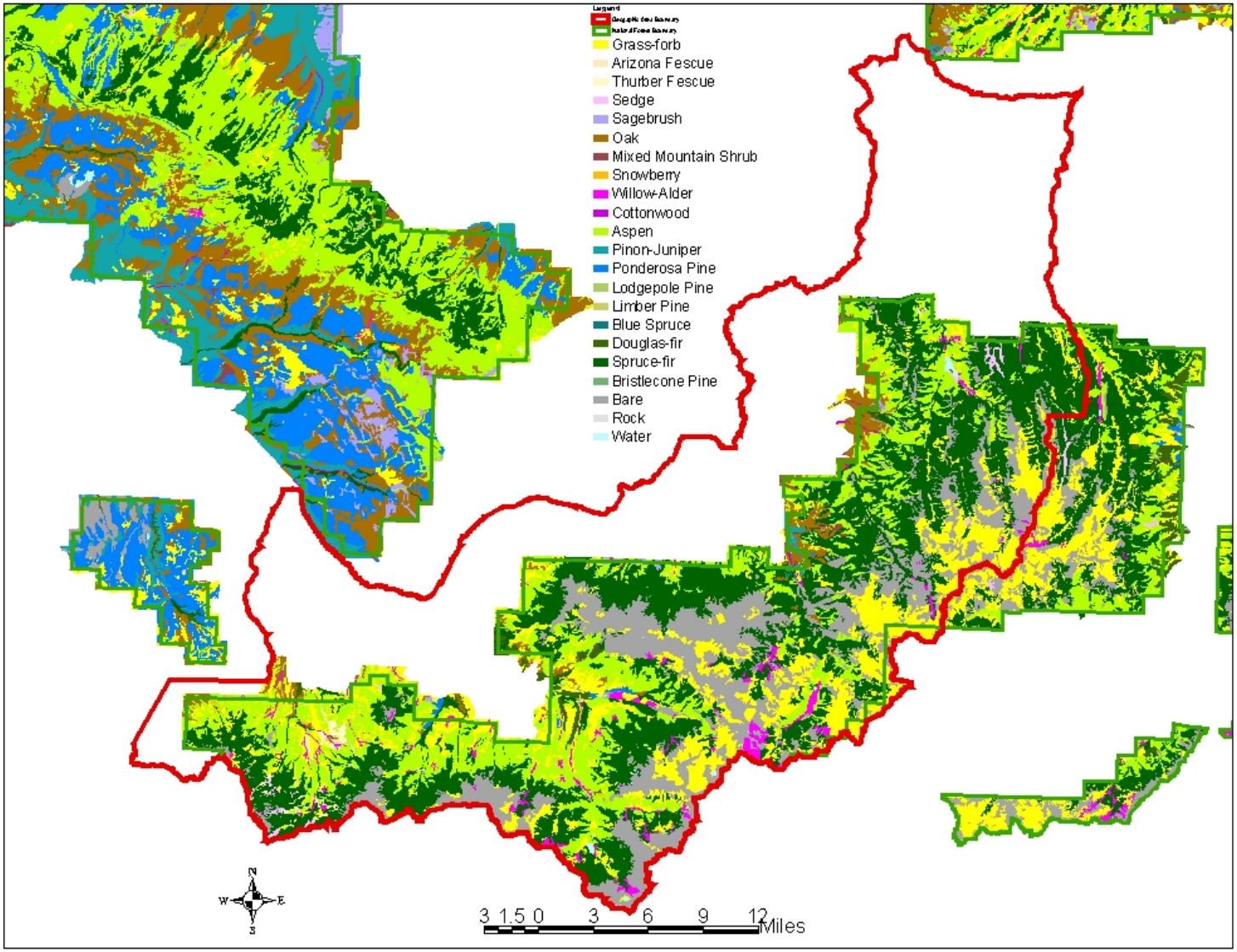


Figure 2. Map of Current Vegetation



Habitat Structural Stages

Vegetation is also characterized by structure. Structure is described by habitat structural stages. Habitat structural stages are defined by size class, tree diameter, and canopy closure (or canopy density measured as crown cover percent). Table 1 displays habitat structural stage definitions (Hoover and Wills, 1987).

Table 1. Habitat Structural Stage Definitions

Habitat Structural Stage	Size Class	Diameter	Crown Cover Percent
1T[1]/1M[2]	Grass-Forb	Not applicable	0 – 10%
2T[1]/2S[3]	Shrub-Seedling	< 1 inch	0 - 10%
3A	Sapling-Pole	1 – 9 inches	11 – 40%
3B	Sapling-Pole	1 – 9 inches	41 - 70%
3C	Sapling-Pole	1 – 9 inches	71 - 100%
4A	Mature	9+ inches	11 – 40%
4B	Mature	9+ inches	41 - 70%
4C	Mature	9+ inches	71 - 100%

1 Opening in forest cover type created by some type of disturbance
2 Natural meadow
3 Shrub cover type

Habitat structural stages can be used as indicators for:

- *Wildlife habitat* - Different wildlife species have different habitat requirements. For example, species that require large diameter trees in dense stand conditions find habitat in areas with 4B and 4C habitat structural stages.

- *Potential risk for future fire, insect and/or pathogen activity* - Trees growing in dense stands can be stressed by competition for water, nutrients and sunlight, making them more susceptible to insect attack.

- *Time since disturbances (fire, harvest, etc.) affected an area*. Age of vegetation is not directly linked to habitat structural stage; however, relative stages of succession can be implied. Early stages of succession are shown as habitat structural stages 1 or 2; later successional stages are usually in habitat structural stage 4A/4B/4C. Sometimes structural stages 3A/3B/3C may be the same age as 4A/4B/4C..

Current habitat structural stages for NFS lands within the San Juans Geographic Areas are shown in Figure 3. Please note, on Figure 3 natural meadows in grass-forb cover types are shown as structural stage 1M, and shrub cover types are shown as structural stage 2S.

Figure 3. Current Habitat Structural Stages, San Juans Geographic Area

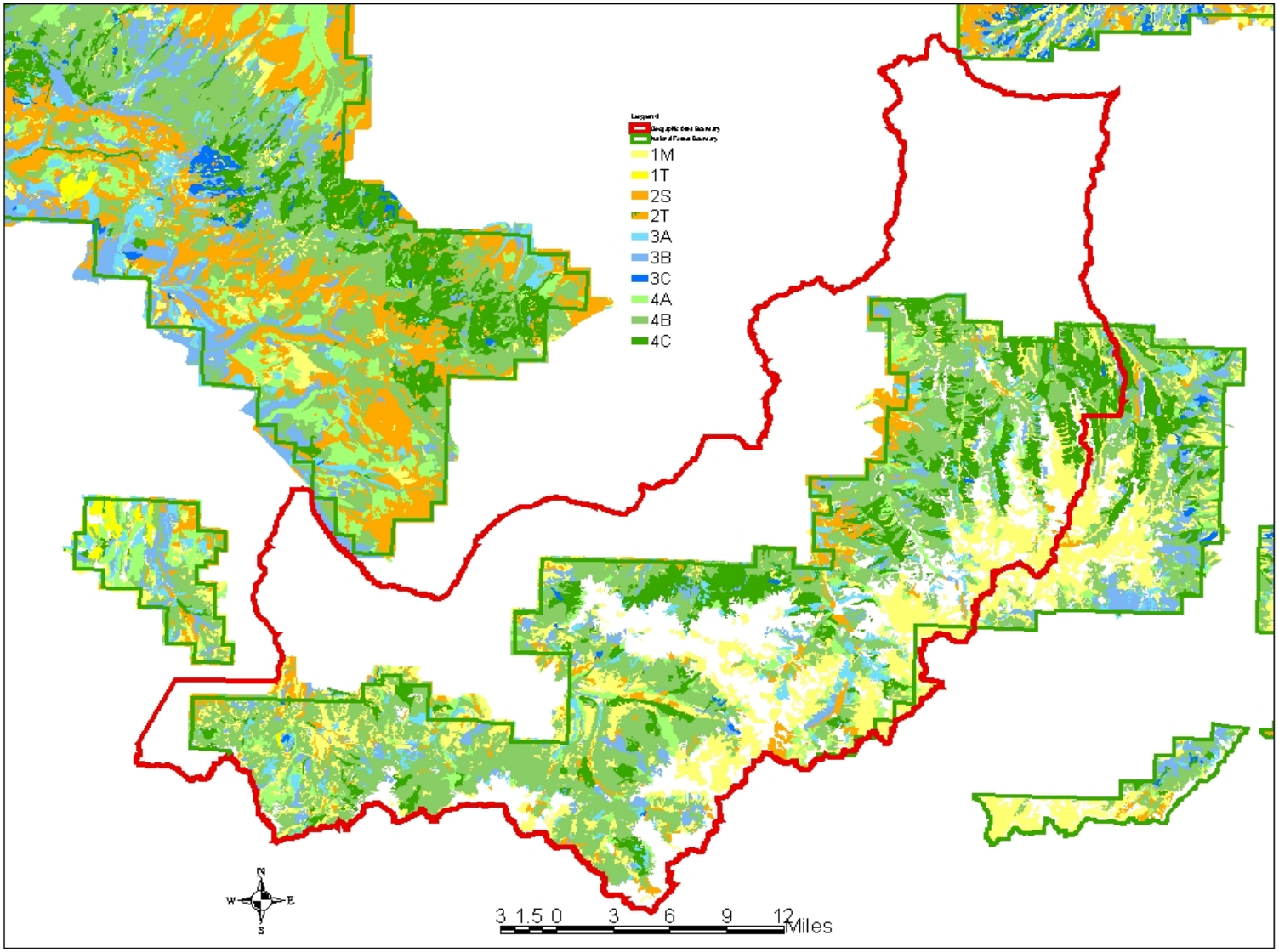
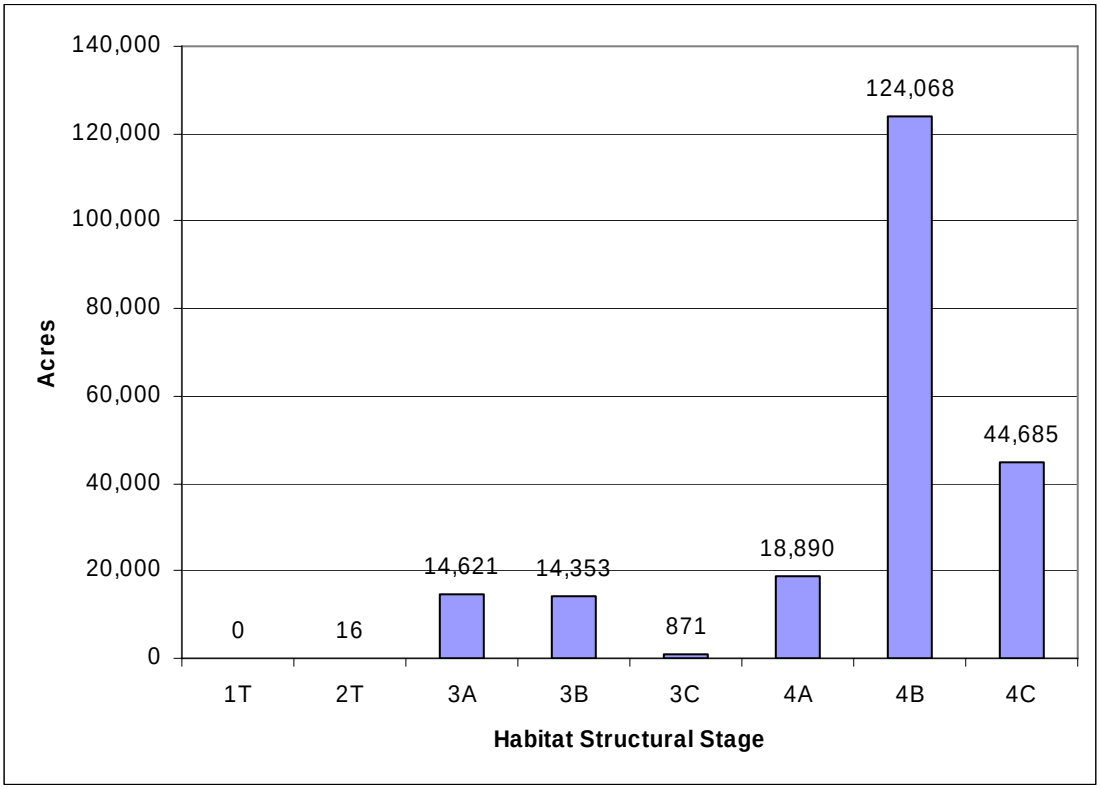


Figure 4 displays the distribution of habitat structural stages for the forest and woodland cover types (spruce-fir, aspen, Douglas-fir, ponderosa pine, blue spruce, cottonwood, lodgepole pine, pinyon-juniper) on NFS portion of the San Juans Geographic Area. Note: Natural meadows and shrublands are not included in the chart below.

Figure 4. Habitat Structural Stage Distribution of Forest and Woodland Cover Types, San Juans Geographic Area



This information can also be summarized by looking at the distribution of size classes (Figure 5) and densities or canopy closure (Figure 6) of forest and woodland cover types on NFS lands within the Geographic Area. Again, natural meadows and shrublands are not included in the data shown in Figures 5 and 6.

Figure 5. Size Class Distributions of Forest and Woodland Cover Types

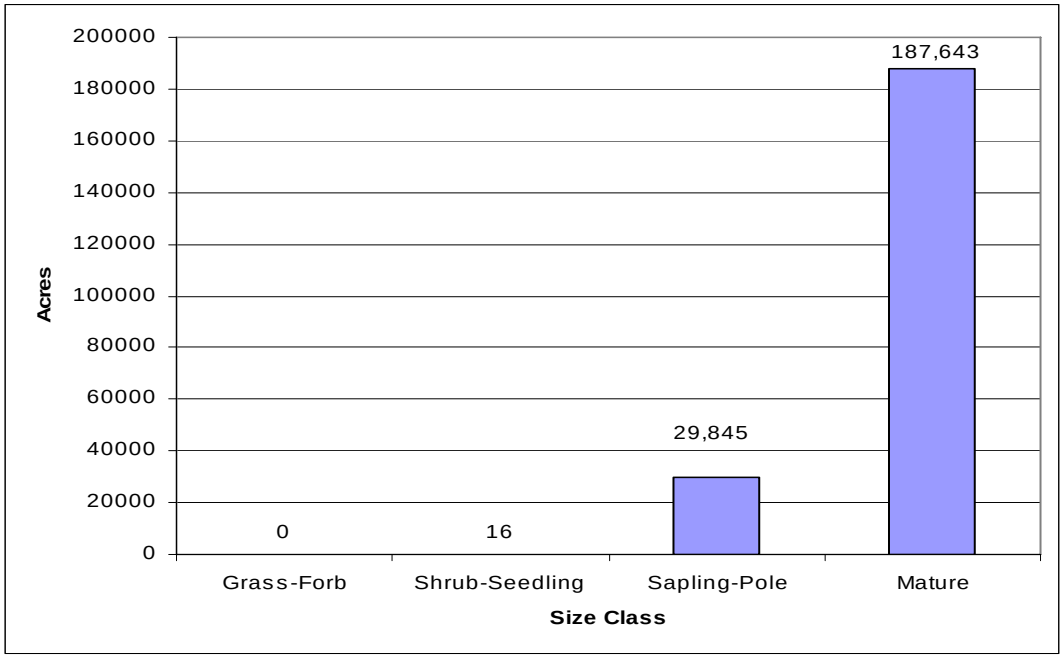
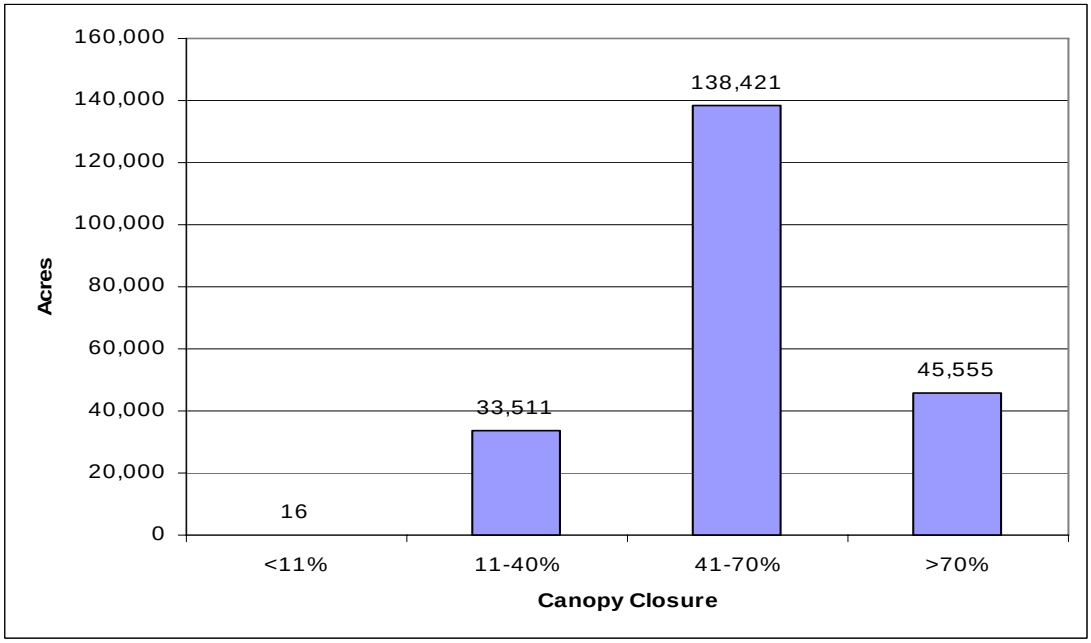


Figure 6. Canopy Closure Distributions in Forest and Woodland Cover Types



Characterization of Current Vegetation Conditions

Additional information on current conditions of different cover types is summarized in Table 2. (Also see timber, range and fire management sections.)

Table 2. Current Vegetation Characterization for NFS lands on San Juans Geographic Area

Cover Type[1]	Composition of GA[1]	Age Distribution[2]	Habitat Structural Stages[1]	Canopy Conditions[1]	Past Activities (1955 – 2003) [3]	Effects of Roads/Trails[4]
Spruce-fir (Englemann spruce – subalpine fir)	135,900 acres 36%.	Age data not available	5%-3A 4%-3B <1%-3C 10%-4A **50%-4B** 31%-4C	85% - single-storied 15% - multi-storied 79% - continuous canopies	5% of type has been affected by timber harvest	83% of type is within ½ mile of a road or trail. Includes: 138 miles roads 223 miles trails
Aspen	76,200 acres 20%.	Age data not available	9%-3A 12%-3B 1%-3C 4%-4A **71%-4B** 3%-4C	82% - single-storied 18% - multi-storied 71% - continuous canopies	3% of type has been affected by timber harvest	85% of type is within ½ mile of a road or trail. Includes: 103 mile roads 137 miles trails
Mixed Conifer (Douglas-fir, blue spruce, lodgepole pine)	3,900 acres 1%.	Age data not available	5%-3A 7%-3B 3%-3C **47%-4A** 32%-4B 5%-4C	64% - single-storied 36% - multi-storied 77% - continuous canopies	None recorded in this period.	54% of type is within ½ mile of a road or trail. Includes: 3 miles roads 3 miles of trails
Pinyon-Juniper	900 acres <1%	Age data not available	**100%-3A**	100% - single-storied 66% - continuous canopies	None recorded in this period.	67% of type is within ½ mile of a road or trail. Includes: 1 mile road 1 mile trail
Cottonwood	600 acres <1%	No age data available.	10%-3A 31%-4A **59%-4B**	78% - single-storied 22% - multi-storied 60% - continuous canopies	None recorded.	50% of these types are within ½ mile of a road or trail. Includes: 3 miles roads 1 mils trail

Cover Type[1]	Composition of GA[1]	Age Distribution[2]	Habitat Structural Stages[1]	Canopy Conditions[1]	Past Activities (1955 – 2003)[3]	Effects of Roads/Trails[4]
Gamble Oak – Mixed Mountain Shrub	12,000 acres 3%	No age data available.	100% 2S Oak: 69% large (>6.5') 30% med. (2.5-6.4') 1% small (<2.5') Mixed Shrub: 22 % large 77% medium 2% small	Oak: 91% - single-storied 9% - multi-storied 67% - >40% cover 33% - <= 40% cover Mixed Shrub: 91% - single-storied 9% - multi-storied 66% - >40% cover 34% - <= 40% cover	8% of these types have been treated with prescribed fire.	52% of these types are within ½ mile of a road or trail. Includes: 10 miles roads 13 miles trails
Sagebrush	600 acres <1%.	No age data available.	100% 2S 89% large (>6.5') 11% med. (2.5-6.4')	100% - single-storied 100% - <= 40% cover	None recorded in this period.	67% of type is within ½ mile of a road or trail. Includes: 0 miles roads <1 miles trails
Willow	7,300 acres 2%	No age data available	100% 2S 60% large (>6.5') 39% med. (2.5-6.4') 1% small (<2.5')	75% - single-storied 25% - multi-storied 49% - >40% cover 51% - <= 40% cover	None recorded.	86% of these types are within ½ mile of a road or trail. Includes: 11 miles roads 18 miles trails
Grass/Forb	72,500 acres 19%	No age data available.	100% 1M	Not applicable	None recorded for this period.	72% of these types are within ½ mile of a road or trail. Includes: 90 miles roads 106 miles trails.

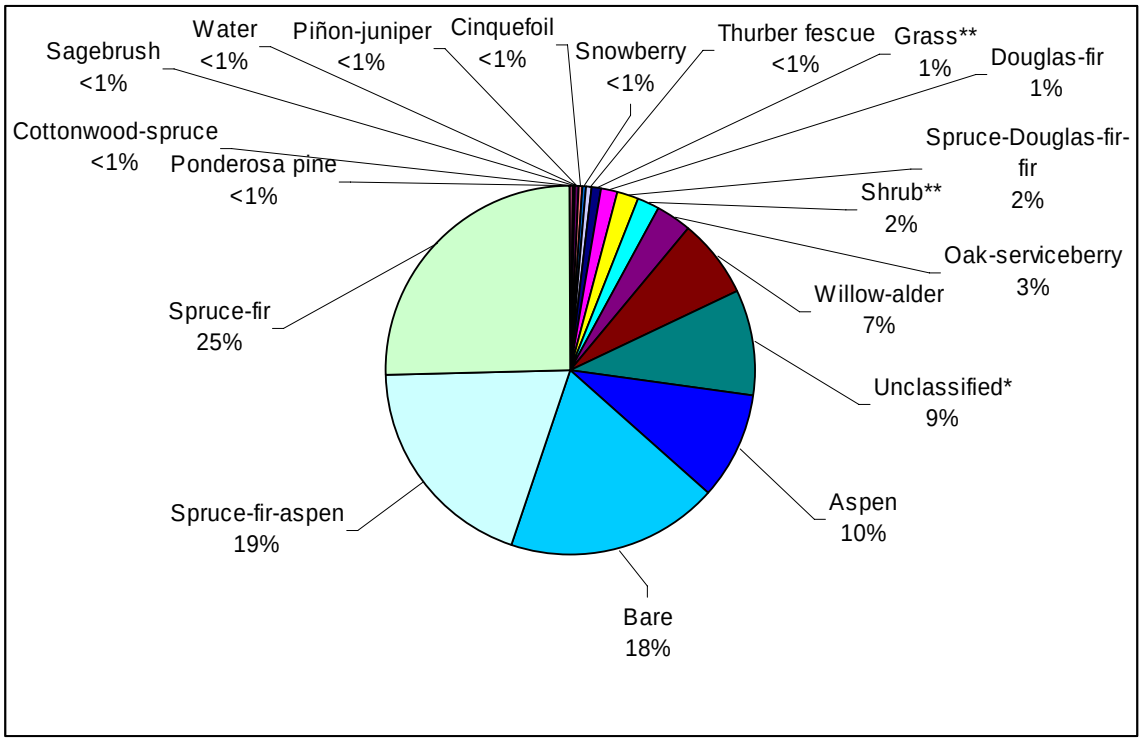
1. Common Vegetation Unit/R2VEG database
2. Stand exam data for Grand Mesa Geographic Area.
3. RMACT database
4. INFRA transportation data related to R2VEG data. Includes all inventoried roads and trail, not just routes open to public use.

Comparison of Current Conditions to Historic Conditions

Environmental factors such as soils, slope, aspect, climate, and elevation determine the plant communities that potentially can grow on a given area. The stable plant community that establishes in the absence of any disturbances (i.e., fire, insect/pathogen mortality, windthrow, drought, harvest) is called the climax plant community. The area where a given climax plant community can grow is classified as a Potential Natural Vegetation (PNV) type, and is named for the climax plant community. For example, spruce-fir forests are the climax plant community at elevations from 10,000 to 12,000 feet, in the subalpine climatic zone (30-40 inches of precipitation annually, 50-70 frost free days, 30-40ºF mean annual air temperature) (Johnston et al 2001). Areas where spruce-fir is the climax plant community are classified as the spruce-fir PNV type.

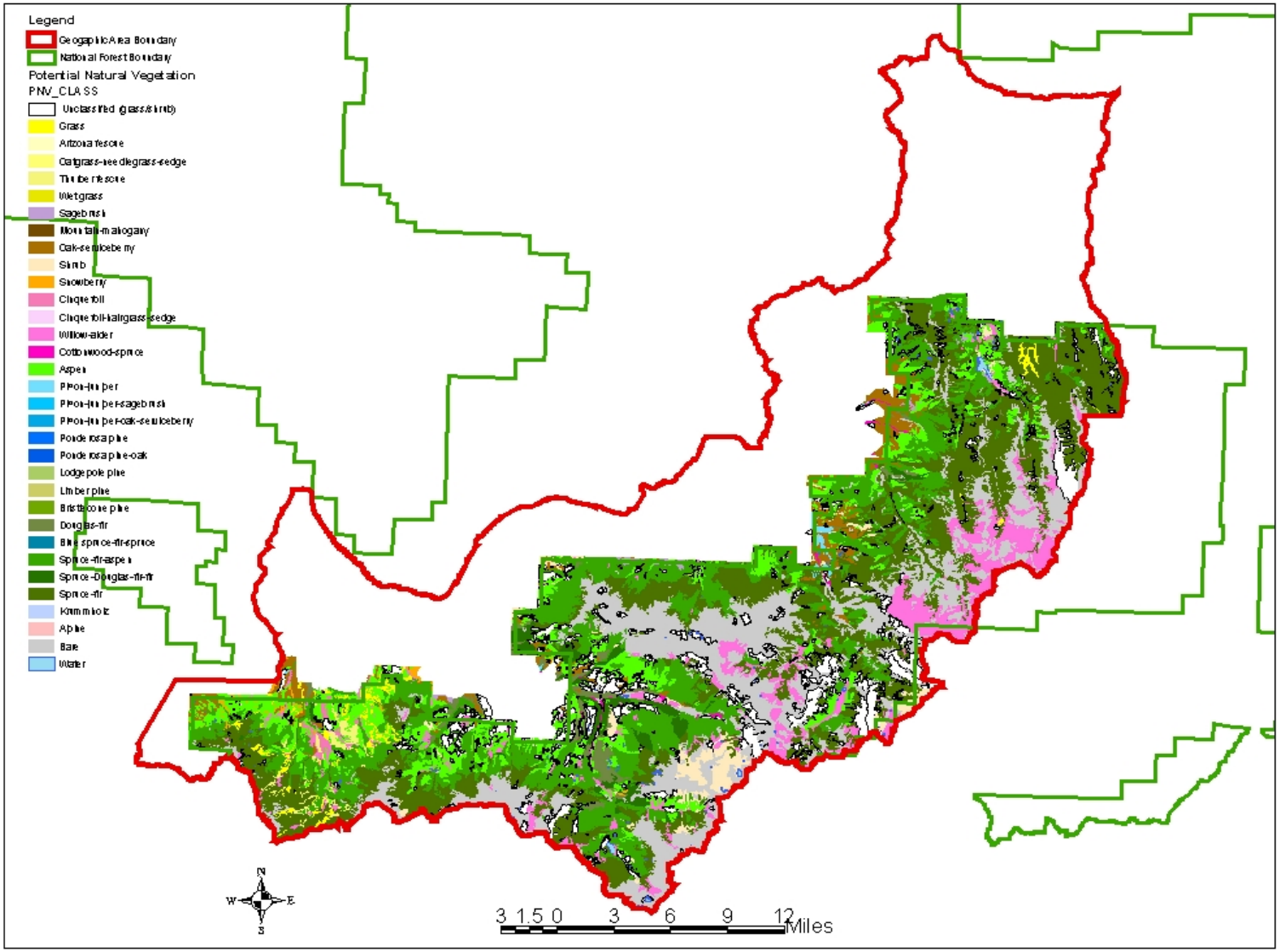
Draft PNV type classification has been completed for this Geographic Area. The PNV type composition on NFS lands within the San Juans Geographic Area is shown in Figure 7. A map of PNV for the San Juans GA is shown in Figure 8.

Figure 7. Composition of Potential Natural Vegetation Types on NFS lands within the San Juans Geographic Area



* ** Unclassified, grass and shrub areas are grass/forb or shrub types where the PNV type has not yet been assigned.

Figure 8. Potential Natural Vegetation on NFS portion of San Juans Geographic Area



Historically, for any given PNV type, natural disturbances (i.e., fires, insect outbreaks) occurred at characteristic intervals and intensities, called regimes. When a disturbance was intense enough to change the existing plant community (e.g., some or all of the overstory was killed), the remaining vegetation followed a natural progression, or succession, of plant communities that changed over time. If no further disturbances occurred, an area eventually returned to the climax plant community. However, if multiple disturbances occurred on the same area earlier seral plant communities would be perpetuated on a site for extended periods. The natural disturbance regimes and succession cycles resulted in shifting mixtures (or ranges) of different seral plant communities (or stages) within any given PNV type at any point in time.

The Vegetation Dynamics Development Tool (VDDT) (Beukema et al. 2003) was used to model the expected range in seral conditions that would have existed under historic disturbance regimes for forest, woodland and shrub PNV types. The results displayed in the following tables are conditions that would have been distributed across an entire PNV type on the Geographic Area. Results are scale dependant. For example, if a large fire burned an entire watershed, all of a given PNV type in that watershed could be set back to an early seral condition. However, when the watershed is considered as part of the Geographic Area, the mixture of seral conditions for that PNV type would be within the expected ranges. Both situations would have occurred naturally.

The next sections include comparisons of current conditions to historic conditions for the most common PNV types on the San Juans Geographic Area, to see where differences occur. This information can be used to identify future management opportunities.

Spruce-Fir PNV Type

The spruce-fir PNV type is mapped on 25 percent of the San Juans Geographic Area. The climax community in this PNV type includes Englemann spruce and supalpine fir as the overstory species. In some areas just Englemann spruce may be the overstory species (Romme et al 1999). The spruce-fir PNV type includes 69 percent of what is currently classified as spruce-fir cover type.

Table 3 describes the seral stages and the timeline for succession in the spruce-fir PNV type. This table also displays a comparison of the modeled historic range of seral conditions to the current seral conditions (as percentages) within the spruce-fir PNV type

Table 3. Succession (Seral Stages) in Spruce-Fir PNV Type

	Early	**Early-Mid**	**Late-Mid**	**Late**
Seral Stage Descriptions*	Initially grass/forb, low shrub with spruce seedlings eventually becoming established. May last 50 to-200 years, depending on the time it takes trees to become established.	Dense pole-sized spruce, grass and forb understory, lasting up to 150 years	Mature spruce overstory with fir and spruce trees growing in the understory. May persist 150 to 300 years.	Variable density of mature conifer, multiple age and size classes. New trees can become established in gaps in canopy. Lasts until next stand replacing disturbance
VDDT Modeled Range of Seral Conditions	27-32%	20-24%	12-13%	31-40%
Current Seral Conditions	1%	43%	56% (Limited age data makes it difficult to differentiate between late-mid and late seral conditions.)	

*Romme et al. 2003

Currently much of the spruce-fir PNV type in mid to late seral conditions (including both early-mid and late-mid) and a small amount is early seral. A large percent of this PNV type is in inaccessible areas at high elevations and over 70 percent of this type is on steeper slopes (> 40 percent slopes). Information on stand ages and disturbance history has not been collected that would validate seral stage assignments. Because this PNV type takes a very long time to progress through the different successional stages, the time since last major disturbance may not be long enough for to allow a full range of seral conditions to develop.

The historic fire regime for the spruce-fir PNV type was long return interval (> 200 years), stand replacing fires, which could cover areas from 1,000 to 10,000 acres (Peet 1981 as cited in Neely et al 2001) mixed with infrequent low-intensity surface fires that affected much smaller areas. Fire return intervals tended to be longer at higher elevations and in moist depressions and valley bottoms, up to 500 years (Romme et al. 1999). Recent fires have been very infrequent and usually very small in this PNV type, as evidenced by the large percent in late-mid seral conditions.

A variety of insect and pathogen agents affect spruce-fir forests (see Forest Health section). Spruce beetle outbreaks have occurred in several areas of this PNV type in the late 1800s and again in the 1950s. Sanitation/salvage harvest activity removed mostly older spruce trees, releasing the subalpine fir and younger spruce in the understory. These changes resulted in stands remaining in mid-seral conditions for longer periods.

Because this PNV type is relatively inaccessible (see above), past harvest activities in the spruce-fir PNV type have been localized in certain areas (Upper Middle Beaver, East Dallas, West and Middle Forks of the Cimarron, High Mesa and Failes Creek). Shelterwood (1970s to mid 1990s) and selective sanitation/salvage harvests (1950s) were the silvicultural methods used on the majority of the areas. These harvest practices

reduced the density of stands but did not alter the mid-seral condition. Some clearcutting occurred in the 1960s and these areas are classified as early seral condition, above.

Spruce-Fir-Aspen PNV Type

The spruce-fir-aspen PNV type is mapped on 19 percent of the San Juans. The climax community in this PNV type includes Englemann spruce and subalpine fir as the dominant overstory species with aspen occurring in all seral stages. The spruce-fir-aspen PNV type is comprised of 28 percent of the current spruce-fir cover type and approximately 47 percent of the current aspen cover type.

Table 4 describes the seral stages and timeline for succession in the spruce-fir-aspen PNV type. This table also displays a comparison of the modeled historic range of seral conditions to the current seral conditions (as percentages) within the spruce-fir-aspen PNV type.

Table 4. Succession (Seral Stages) in Spruce-Fir-Aspen PNV Type

	Early	**Early-Mid**	**Late-Mid**	**Late**
Seral Stage Descriptions*	New stand of aspen seedlings/suckers with grass and forb understory lasting 30-50 years	Dense pole-sized aspen, grass and forb understory, lasting up to 100 years	Mature aspen overstory with conifer trees growing in the understory. May take 100 to 200 years for conifers to dominate stand.	Mature conifer, scattered mature aspen in overstory. New trees can become established in gaps in canopy. Lasts until next stand replacing disturbance
VDDT Modeled Range of Seral Conditions	13-19%	22-29%	13-16%	35-49%
Current Seral Conditions	1%	24%	75% (Limited age data makes it difficult to differentiate between late-mid and late seral conditions.)	

*Romme et al. 2003

This PNV type is generally below the spruce-fir PNV type in elevation. Approximately half of the spruce-fir-aspen PNV type currently has more aspen in the overstory, and half currently has more conifer in the overstory. As evidenced by the percentages above, most of this PNV type is in the late-mid or late seral condition. This PNV type also takes a long time to progress through the different successional stages. If additional inventory of stand ages and understory conditions were done in stands dominated by conifer, stands could be differentiated between late-mid and late seral conditions.

Similar to the spruce-fir PNV type, the spruce-fir-aspen PNV type also has infrequent fires. However, in 2002 the West Beaver fire burned over 600 acres and in 2003 the Beaver fire burned over 300 acres adjacent to the 2002 burn. Both fires were predominantly in this PNV type, affecting approximately one percent of this type (not reflected in the percentages above).

Little of this PNV type across the San Juans Geographic Area has been affected by harvest activity. What has occurred is localized in the East and Mid Beaver watersheds, where aspen clearcutting was done in the early 1990s. These areas are reflected in the early seral conditions in the table above.

Aspen PNV Type

In the aspen PNV type, pure aspen is the climax plant community, with no conifer species present. The aspen PNV type is mapped on 10 percent of the San Juans Geographic Area. Approximately 46 percent of what is currently shown as the aspen cover type is included in the aspen PNV type.

Table 5 depicts the seral stages and timeline for this PNV type as well as a comparison of the modeled historic range of seral conditions to the current seral conditions (as percentages).

Table 5. Succession (Seral Stages) in Aspen PNV Type

	Early	**Early-Mid**	**Late-Mid**	**Late**
Seral Stage Descriptions*	New stand of aspen seedlings/suckers with grass and forb understory lasting 10 to 20 years	Dense pole-sized aspen, grass and forb understory, lasting 50 to 80 years	Mature aspen overstory, aspen regeneration in the understory where overstory gaps results from individual tree mortality, lasting up to 80 years	Stable multi-storied, multi-aged aspen stand, predominantly forb understory.Lasts until next stand replacing disturbance
VDDT Modeled Range of Seral Conditions	8-14%	23-26%	17-24%	23-43%
Current Seral Conditions	4%	25%	72% (Limited age data makes it difficult to differentiate between late-mid and late seral conditions.)	

*Romme et al. 2003

The aspen PNV type is also predominantly in late-mid to late seral conditions. Very little (four percent) is in early seral conditions. Stand age is the significant variable that differentiates between late-mid and late seral conditions. Age data is limited. If more age information was available it is likely that some of the stands currently classified as late-mid would actually be in late seral condition.

As mentioned above, information on past natural disturbances is lacking in this Geographic Area. Elsewhere on the GMUG the historic fire regime for aspen has been shown to be more frequent than for the two previous PNV types. Aspen forest appear to be dominated by a regime of relatively infrequent, large fires at higher elevations, and smaller more frequent fires at lower elevations (Kulakowski and Veblen, Draft 2004). Fire has not had a significant effect on this PNV type, as indicated by the large amount in late-mid seral conditions.

Less than four percent of this PNV type has been affected by timber harvest. Clearcuts were done in the 1960s near Silverjack Reservoir and in East Dallas. Aspen clearcuts along the lower slopes of Lone Cone and in the Mid and East Beaver watersheds were done in the 1990s. These areas are included in the early seral conditions in the table above.

Oak-Serviceberry PNV Type

The oak-serviceberry PNV type has been mapped on three percent of NFS lands on the San Juans. Historically, fires occurred in this PNV type at frequent intervals (every 15-30 years). The dominant shrub species Gambel oak and serviceberry resprout following fire, so areas quickly returned to shrubs. This type transitioned from one seral condition to another at approximately 30 year timesteps. Table 6 compares current conditions in this PNV type to the expected historic mix of seral conditions. The majority of the oak-serviceberry PNV type is in mid to late seral conditions, indicating a lack of recent disturbances.

Table 6. Succession (Seral Stages) in Oak-Serviceberry PNV Type

	Early	**Mid**	**Late**
Seral Stage Descriptions*	Stands are dominated by resprouting shrubs with grasses and forbs in the understory. Persists to 20 or 30 years	Dense clumps of shrubs, usually < 6 feet high. Grass and forbs between clumps. Persists from 30 to 40 years.	Shrubs > six feet high, more open canopy. Grass/forbs between and beneath shrub canopies. Persists until next stand replacing disturbance.
VDDT Modeled Range of Seral Conditions	30-70%	28-34%	0-36%
Current Seral Conditions	9%	27%	64%

*Romme et al. 2003

Most of the oak-serviceberry PNV type in the San Juans Geographic Area is currently in late seral conditions, and very little is in early seral conditions. The amount of mid seral conditions is approximately what would be expected historically. The disparity between the historic conditions in early and later seral stages is due to a lack of disturbance in this PNV type.

Frequent fires are the historical regime in this PNV type. Fires would have started below the forest on what is mostly private land, now. Fire suppression efforts, cover type conversion and past livestock grazing have not allowed fires to burn in this PNV type.

A prescribed fire in the Baldy area in the early 1990s burned approximately 1,000 acres of this PNV type (approximately eight percent of the total type in the Geographic Area). The purpose of this treatment was to improve habitat for the bighorn sheep herd that occupies this area, by restoring earlier seral conditions that provide more forage than later seral conditions.

Key Findings

- Spruce-fir and aspen cover types currently occupy just over half of the NFS lands in the San Juans Geographic Area.
- Grass/forb types and bare/rock each comprise 19 percent of the San Juans Geographic Area. The majority of these types are in alpine areas (elevations > 11,000 feet), with 56 percent of the grass/forb types and 86 percent of the bare/rock occurring at these elevations.
- The San Juans Geographic Areas is dominated by late-mid seral conditions in forest and woodland cover types.
- Approximately 86 percent of the forest and woodland cover types are in mature size classes.
- The lack of recent disturbances (fire, insect and disease mortality, harvest) is also reflected in current forest and woodland vegetation conditions – 85 percent have dense canopy closures (> 40 percent canopy closure).
- There is very little early seral condition in any cover type on the San Juans Geographic Area, as shown in Tables 3 through 6. Lack of age data does not allow differentiation between late-mid and late seral conditions in the dominant forest types.
- When comparing the compositions of current vegetation cover types to PNV types (Figure 1 through Figure 7), the forest types and bare areas are approximately equivalent. The biggest differences occur in the willow and grass/forb types. There is currently less of the willow cover type and more grass/forb types on the landscape that would be expected. These conditions occur in alpine areas and are partly a result of limitations in both the current vegetation and the PNV type data. Additional evaluation is needed to determine if this shift in cover type has a relationship to past management activities, such as livestock grazing.

Vegetation Trends

- The trend across all vegetation cover types on the San Juans is to continue successional progress predominantly with the absence of human-caused disturbances. Structural and compositional conditions in each cover type will continue to progress along successional timelines. A shift from aspen dominated forests to conifer dominated forests is also occurring as a result of successional changes.

Vegetation Management Implications

Management implications of vegetation conditions relate to differences between current and historic vegetation conditions. Where current landscape conditions are similar to historic conditions, landscapes are more resilient following disturbances, suitable habitat

is provided for all species that evolved there, and ecosystems are productive and sustainable over time. Where current conditions deviate from historic ranges, there are increased risks for natural disturbances to be of higher intensities and affect larger areas than in the past; some habitats may become very limited or lost, threatening species viability; and loss of productivity can result in both ecological and economic losses. Management activities that can include both human and natural disturbances can be used to restore more desirable vegetation conditions. Management implications for specific cover types are discussed below.

Spruce-Fir

- The spruce-fir cover type occurs in both the spruce-fir and the spruce-fir-aspen PNV types. Disturbances (human or natural) that occur in the spruce-fir-aspen PNV type will result in aspen regeneration within a very short period of time. Disturbances in the spruce-fir PNV type do not have aspen as an early seral species, and may take 50 to 200 years to regenerate to spruce.

- Both the spruce-fir and spruce-fir-aspen PNV types are currently dominated by mature, dense structural conditions. These conditions are ripe for fire and epidemic insect and pathogen outbreaks (see Forest Health and Fire Management sections). Because so much of the landscape is in the same condition, there is a high probability that large areas can be affected at the same time. Large scale disturbances (both fire and insect outbreaks) are the natural regimes for these PNV types. Management activities that increase diversity in age, size and seral condition, could be used to reduce the potential effects of natural disturbances.

- The majority of this cover type in the San Juans Geographic Area (72,800 acres, or 54 percent) is in Wilderness and currently unroaded areas. Only natural process will alter vegetation conditions in Wilderness areas and potentially in unroaded areas where future management decisions (i.e., theme designations) limit or restrict management activities.

Aspen

- The aspen cover type occurs in both the spruce-fir-aspen PNV type (as the early through late-mid seral conditions) and the aspen PNV type (all seral stages). Based on the percentages in each seral stage displayed in the above tables for these PNV types, there is less aspen cover type currently on the landscape than would have been expected historically, and what is present is in predominantly in later seral conditions.

- Aspen stands become very susceptible to cankers and root rots above the age of 110 years. A large percentage of the aspen cover type on the San Juans Geographic Area is estimated to be between the age of 80 and 120 years. An increasing amount of mortality caused by these fungal agents is expected in the future.

- Over 40 percent of the aspen stands on the San Juans Geographic Area include conifer species in the understory or as codominant species. In the absence of some disturbance that affects entire stands, these stands will eventually succeed to conifer dominated cover types. A shift from an aspen cover type to various conifer cover types will change the types of habitat available on the San Juans Geographic Area to favor those species that require mature conifer forests.

Gambel Oak and Mountain Shrubs

- Current conditions in the Gambel oak and mixed mountain shrub cover types have less patchiness and structural stage diversity than would have occurred historically. The result is current conditions are more susceptible to higher intensity fires that may affect larger areas of land than would have occurred in the past. There is also less diversity in the types of habitat provided by these cover types than would have been present.

Grass-Forb

- The species composition in grass-forb cover types on the San Juans has been altered from historic conditions through livestock grazing, and some localized seeding of non-native species (i.e., Big Cimarron Forks area). There is a need to improve data on species composition in these areas to determine to what extent these areas are departed from historic conditions.

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