

Coconino National Forest Plan Revision

Montane subalpine and Colorado Plateau/Great Basin Grasslands

General description

- Laying in a patchwork across the Colorado Plateau, the grasslands are meadows varying in size from just a few acres to well over 1,000 acres. A wide variety of species of grasses and forbs characterize the vegetation which varies according to soil moisture and temperature.
- Grasslands provide vegetative diversity needed by wildlife. They provide breathtaking views and are themselves a highly attractive visual resource.
- In some areas, grasslands are dwindling through channel erosion and subsequent dropping of the water table. This, plus lack of fire as a natural disturbance, encourages the growth of trees and shrubs. As grasslands shrink, they become less connected; vegetation for livestock and wildlife is reduced; and visual quality declines.

Subalpine grasslands

- These grasslands occur at elevations ranging from 8,000 to 11,000 feet on warmer drier aspects than adjacent soil units that support mixed conifer. These productive communities often harbor several plant associations with varying dominant grasses and herbaceous species.
- Dominant species may include pine dropseed (*Blepharoneuron tricholepis*), nodding brome (*Bromus anomalus*), various sedges (*Carex spp.*), Arizona fescue (*Festuca arizonica*), Koeleria pyramidata (mountain junegrass), mountain muhly (*Muhlenbergia montana*), muttongrass (*Poa fendleriana*), and squirreltail (*Sitanion hystrix*). Trees may occur in trace amounts within these grasslands, and along their periphery. Shrubs may also be present.
- These meadows are seasonally wet and closely tied to snowmelt. They are maintained by fire and influenced by weather.

Montane grasslands

- These grasslands generally occur at elevations between 6,550 and 8,000 feet. They are more productive than grasslands at lower elevations.
- Grass species include, but are not limited to: Kentucky bluegrass (*Poa pratensis*), muttongrass (*Poa fendleriana*), mountain muhly (*Muhlenbergia montana*), spike muhly (*Muhlenbergia wrightii*), Arizona fescue (*Festuca arizonica*), blue grama (*Bouteloua gracilis*), red three-awn (*Aristida longiseta*), squirreltail (*Sitanion hystrix*), Acmil, and

pine dropseed (*Blepharoneuron tricholepsis*). Trees occur along the periphery of montane grasslands.

- Vegetation in some of the montane grassland soil types are maintained by fire. They are also influenced by weather.

Great Basin grasslands

- These grasslands occur at a lower elevation than either subalpine or montane grasslands and are less productive than montane or subalpine grasslands. They consist mostly of grasses with smaller amounts of forbs and shrubs. At climax, trees can be present in trace amounts up to 15 percent canopy cover depending on soil type. Tree canopy is increasing in some areas, especially in the northeast part of the Forest around Wupatki National Monument.
- Species include but are not limited to: western wheatgrass (*Pascopyrum smithii*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), galleta grass (*Hilaria jamesii*), hairy grama (*Bouteloua hirsuta*), spike muhly (*Muhlenbergia wrightii*), needle and thread grass (*Hesperostipa comata*). Trees may include sparse one-seeded juniper (*Juniperus monosperma*), alligator juniper (*Juniperus deppeana*), [will add common name] juniper (Juer), Utah juniper (*Juniperus osteosperma*) and Colorado Piñon pine (*Pinus edulis*).
- Natural disturbances include weather, natural soil movement (natural shrink-swell and seasonal surface cracking), and fire in one soil type.

Desired Conditions for all grasslands (landscape scale: 10,000+ acres)

- The composition (*mix of species*), structure (*form and shape of the species of the composition on the landscape*), and distribution (*where it occurs on the landscape*) of native vegetation reflects a mix of early, mid, and late seral stages. Early seral stages will typically contain more forbs and as stages get older, they are dominated by more grasses and fewer forbs.
- Vegetation height and canopy cover are sufficient to support the historic fire return interval and provide appropriate cover for different wildlife species. [Will insert qualitative description to clarify 'appropriate'.] Tree and shrub canopy cover are each less than 10 percent.
- There are inclusions and variability within the landscape as well as ecotones on the fringes. Allow for adequate regeneration and balance of grasses and forbs, including warm and cool season species.

- Plant and litter cover is sufficient to maintain long term soil productivity and soil function, including nutrient cycling, and the ability of the soil to resist erosion. Soils can readily absorb, store and transmit water vertically; accept, hold and release nutrients; and resist erosion.
- The rate of water infiltration is adequate to minimize surface runoff, and reduce accelerated erosion and subsequent sedimentation into connecting waters downstream. This will maintain or improve water quality. *[Will insert montane specific language to account for concave depressions that hold water.]*
- Grasslands have sufficient resiliency to withstand climatic changes without substantial decline in productivity and cover.
- *[Will review: Manage to achieve 90 percent potential ground cover to prevent erosion and gully formation.]*
- Invasive species do not occur at levels that disrupt ecological functioning.
- There are *[number to be determined]* of plants known to be used by tribes that traditionally use the forest. These plants thrive here.
- *[Will insert language regarding how grasslands are connected based on distribution of mollisol (grassland origin) soils and maintenance of herbaceous vegetation, especially on edges that adjoin fire-adapted ecosystems.]*

Table 1 shows how canopy cover of grass and forbs, and plant basal area and litter cover vary among grassland types.

Table 1.

Grassland type	Canopy cover grasses & forbs¹	Plant basal area and herbaceous litter²
Subalpine	> 80 percent	> 90 percent
Montane	65-80 percent	40-90 percent
Great Basin	20-50 percent	25-45 percent

Guidelines

- There should be low disturbance in key pronghorn fawning areas during fawning season.
- Leafy spurge should be absent from montane grasslands.

¹ Depends on Terrestrial Ecosystem Unit or soil type *[will determine if splitting grasses and forbs is informative]*

² Depends on Terrestrial Ecosystem Unit or soil type

Draft revised plan language for Montane & Great Basin Grasslands – November 2010. For more information on Forest Plan Revision, visit <http://www.fs.fed.us/r3/coconino/plan-revision.shtml>.

Working Draft – text under development, subject to change
Public input is welcome and would be most useful if received by December 10, 2010.
No text is final until Plan approval in Fall 2012.

- Roads should not be located in grasslands when they can be located in other areas or should be reconstructed to avoid long term impacts to soil productivity and soil condition
- Activities and uses should minimize impacts to long term soil productivity and soil condition *[will clarify scale]*

Objectives – *[none currently determined]*

Management approach

- Provide media and public information focused on the unique properties of meadows and appropriate activities within meadows. *[Will adapt to apply to aspen, pinyon, etc.]*
- Collaborate with partners and stakeholders on grassland restoration and education.