

SPECIES DIVERSITY EVALUATION: PLANTS

HABITAT NEEDS, DISTRIBUTION, AND DESCRIPTION OF PLANTS SPECIES-OF-CONCERN AND SPECIES-OF- INTEREST CIMARRON AND COMANCHE NATIONAL GRASSLANDS

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Note: This evaluation report updates the 2005 report of the same name.

Introduction

Under the 2005 National Forest Systems Land Management Planning Rule¹ (2005 Planning Rule), the U.S.D.A. Forest Service is directed to “Focus evaluation and development of plan components for species diversity on those species for which the Responsible Official determines that provisions in plan components are needed” (36 CFR 219). Forest Service Handbook Directives released in March 2005 state: “The Responsible Official should identify federally threatened and endangered species, species-of-concern, and species-of-interest whose ranges include the plan area², taking into account limitations that exist at the edge of a species’ range” (FSH 1909.12, 43.22). To meet these requirements, this document lists and describes the plant species evaluated as species-of-concern for the Cimarron and Comanche National Grasslands Land Management Plan (Plan). It also describes habitat needs for species-of-concern to assess if Plan components provide for the identified species.

The Existing Conditions Description: Botany report³ (USDA FS 2005) prepared for the draft Plan provides a species-specific summary of current conditions for plants in the Planning Area⁴ that are of interest for conservation or monitoring objectives. This report evaluated plant habitat on the Grasslands and provides a starting point for developing the species-of-concern list and species-of-interest list, but additional criteria were also considered based on the final planning directives⁵ developed for the 2005 Planning Rule.

Species-of-Concern

Species-of-concern are defined as species for which the Responsible Official determines that management actions may be necessary to prevent listing under the endangered Species Act (ESA). Following the recommendations described in FSH 1909.12, 43.22b, potential species-of-concern were identified as:

1. Species listed as candidate and proposed species under the ESA.
2. Species with ranks of G-1 through G3 on the NatureServe ranking system.

¹ U.S. Department of Agriculture, Forest Service. 2005 National Forest System Land Management Planning, Final Rule (2005 Planning Rule). 36 CFR 219; FR 70(3): 1023-1061.

² Plan Area – The area that includes only those lands administered by the Forest Service.

³ U.S. Department of Agriculture, Forest Service. 2005b. Existing conditions descriptions: Botany. Unpublished paper on file at: Pike and San Isabel National Forests and Cimarron and Comanche National Grasslands Supervisor's Office, Pueblo, CO. All Plan-related reports and evaluations are available at http://www.fs.fed.us/r2/psicc/projects/forest_revision/evaluations.shtml [Accessed 15 August 2006]

⁴ Planning Area – The area that includes Forest Service-administered lands described as the Plan Area plus all other adjacent lands, including private and state-owned and state-managed lands.

⁵ U.S. Department of Agriculture, Forest Service. National Forest System Land Management planning directives. FR 71(20): 5124-5153.

3. Intraspecific (subspecific) taxa with ranks of T-1 through T-3 on the NatureServe ranking system.
4. Species that have been petitioned for federal listing and for which a positive “90-day finding” has been made (a 90-day finding is a preliminary finding that substantive information was provided indicating that the petition listing may be warranted and a full status review will be conducted), and
5. Species that have been recently delisted (these include species delisted within the past five years and other delisted species for which regulatory agency monitoring is still considered necessary).

Eight plant species on the Grasslands met the above criteria

1. Andean prairie-clover (*Dalea cylindriceps*)
2. Colorado fraseria (*Frasera coloradensis*)
3. Colorado gumweed (*Grindelia inornata*)
4. Colorado Springs evening-primrose (*Oeothera harringtonii*)
5. Rocky Mountain bladderpod (*Lesquerella calcicola*)
6. Raven Ridge false goldenweed (*Oonopsis foliosa* var. *monocephala*)
7. Sandhill goosefoot (*Chenopodium cycloides*)
8. Wheel milkweed (*Asclepias uncialis* ssp. *uncialis*)

All but Rocky Mountain bladderpod have been recommended as species-of-concern.

Wheel milkweed

Species evaluation

Wheel milkweed (*Asclepias uncialis* ssp. *uncialis*) is ranked by NatureServe (2005) as G3G4T2T3. The rounded rank is T2, which suggests that this plant may require management actions to prevent listing under the ESA. Current research is being conducted on the taxonomy of this group and the subspecies, which may elevate it to species rank. In this case, subspecies *uncialis* would become G2G3 or G2, considering apparent declines in the species’ populations.

Wheel milkweed is found in shortgrass prairie dominated by blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*). In the Planning Area, habitat for this species occurs in the Shortgrass Prairie and Canyonland Ecosystems. In its habitat, wheel milkweed is a low-density species. It was formerly regularly encountered, but there are few recent records (Decker 2006). Although a habitat generalist, this species is rare because of its sensitivity to soil disturbance (Locklear 1996). As a result, management actions that may affect this species include grazing, prescribed fire, weed management, and unregulated recreation. Efforts should be made to maintain current populations by avoiding ground disturbance at known sites. Any herbicide use in the vicinity of these populations should be closely monitored. Searches should be conducted for additional plants in appropriate habitat. Small amounts of soil disturbance may be necessary near existing sites to provide seedbed for populations to expand.

Wheel milkweed ranges from Utah and Colorado south to Arizona and New Mexico (NatureServe 2006). There are records from Baca, Las Animas, and Otero counties in Colorado (Decker 2006). There are two records from National Forest System (NFS) lands on the Comanche National Grassland (Comanche) (Decker 2006). One of these records was observed this year (S. Olson pers. obs.), and the other is from 1948.

The conversion of privately-owned land from prairie to other uses, such as dry-land or irrigated cropland, or cattle feedlots, may be partly responsible for the low frequency of encounters of wheel milkweed. As a result, some of the best remaining habitat available is on the Grasslands. Ensuring that habitat is available and is being managed appropriately for this species would help prevent a trend toward federal listing under the ESA.

Wheel milkweed is recommended as a species-of-concern because

- This subspecies is rare throughout its range.
- The frequency of observations has declined in recent decades.
- It is sensitive to soil-disturbing activities.

To prevent listing wheel milkweed under ESA, efforts should be made to maintain current populations by avoiding certain ground-disturbing activities at known sites.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions expressed in the Plan would contribute to self-sustaining populations of wheel milkweed. Desired conditions in the Land Administration category provide for acquiring tracts of land that provide habitat for this species. Desired conditions and objectives for the Shortgrass Prairie Ecosystem include the use of management practices that produce sparse, low-structure vegetation in areas that do not have wheel milkweed populations, and maintaining shortgrass communities that are dominated by blue grama and buffalograss and have 70 – 80% vegetative cover in areas that do have wheel milkweed populations. Special areas provide the best quality examples of habitat this species requires, and the desired conditions for the proposed OU Creek special area include management of livestock grazing to maintain habitat conditions for wheel milkweed.

Guidelines in the Plan are designed to reduce factors detrimental to the sustainability of wheel milkweed on the Grasslands, including the types of ground-disturbing activities that may affect known populations, livestock grazing during the flowering/fruitletting period, and the use of herbicides near known populations.

Sandhill goosefoot

Species evaluation

NatureServe (2006) ranks sandhill goosefoot (*Chenopodium cycloides*) as G3G4, with a rounded global status of G3. The Colorado Natural Heritage Program (CNHP) tracks this species and ranks it S1. The Kansas Natural Heritage Inventory (KNHI) also tracks this species, giving it a rank of S2.

Sandhill goosefoot ranges from southeastern Colorado and southwestern Nebraska, south to western Texas and southern New Mexico (NatureServe 2006). This species has been recorded in Morton County, Kansas, and in Las Animas and Pueblo Counties, Colorado. It has been recorded at ten sites on the Cimarron National Grassland (KNHI 2004), and at two sites within five miles of the Comanche (CNHP 2005).

Habitat of sandhill goosefoot consists of unstable sandy soils on dunes, and stabilized sand in blowouts in sand prairie (Spackman *et al.* 1997). In the Planning Area, habitat for this species occurs in the Sandsage Prairie and Riparian and Aquatic Ecosystems. As an annual life cycle species, populations of this plant may vary widely from year to year, and how long seeds may persist in the seed bank is unknown. Because this is a plant of temporal habitats, it may be threatened by sand prairie stabilization. Other potential threats may include grazing, prescribed fire, roads, trails, weed management, oil and gas development, and unregulated recreation. Grazing and prescribed fire may have beneficial impacts on this species, but both fire and grazing have the potential to damage actively growing plants, reducing seed production. Fire and grazing benefit plants by reducing competition; fire releases nutrients stored in plant matter.

Although bordering between “vulnerable” and “apparently secure” at the range-wide level, sandhill goosefoot would be a useful species to continue monitoring as an “indicator” of unstable sand areas, required by a small but distinct group of plant and animal species. The CNHP has been tracking this species for many years because of its limited range and habitat in Colorado.

Sandhill goosefoot is recommended as a species-of-concern because

1. It is tracked by both CNHP and KNHI.
2. Is rare in both Colorado and Kansas.

It would also serve as a useful species to monitor unstable sand areas. Management actions may be necessary or desirable to ensure unstable sand prairie habitats are retained for a small but distinct group of plant and animal species.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions expressed in the Plan would contribute to self-sustaining populations of sandhill goosefoot. Desired conditions in the Land Administration provide for acquiring tracts of land that provide habitat for this species. The desired conditions for the sandsage prairie ecosystem and the riparian/aquatic ecosystem specifically include maintenance of disturbed areas on sandy soils, targeted in and adjacent to existing populations of sandhill goosefoot. Maps of existing populations of this species on the Grasslands can be used to identify areas where these habitat conditions should be maintained and monitored.

Objectives in the Plan specific to the Sandsage Prairie Ecosystem provide details on how Grasslands management would maintain and improve habitat conditions for sandhill goosefoot. The objective to maintain at least 1 – 5% of the sandsage prairie ecosystem affect by fire annually (see Fire Use Objectives) contributes to improved habitat for this

species. An additional objective (see Livestock Grazing Administration) is to target the combined use of spring burning and grazing in areas where this species occurs, in order to contribute to habitat maintenance and expansion. These activities would provide enough ground disturbance to ensure seedling establishment.

Guidelines in the Plan are designed to reduce factors detrimental to the sustainability of sandhill goosefoot on the Grasslands, including ground-disturbing activities that affect known populations, livestock grazing during the flowering/fruitletting period, and the used of herbicides near known populations.

Andean prairie-clover

Species evaluation

NatureServe (2006) ranks Andean prairie-clover (*Dalea cylindriceps*) as G3G4, with a rounded global status of G3. The KNHI tracks this species and ranks it S2. Although widespread in the Great Plains, this species appears to be infrequent to rare range-wide (NatureServe 2006). Andean prairie-clover ranges from Wyoming and South Dakota south to New Mexico and Texas. There are at least six records from the Cimarron in Morton County, Kansas, and the species has also been documented on the Comanche in Baca County, Colorado.

Andean prairie-clover is a perennial plant found in sandy prairie and dunes. In the Planning Area, habitat for this species occurs in the Sandsage Prairie and Canyonland Ecosystems. It is tolerant of moderate disturbance based on its occurrence in sandy soils. Potential threats may include grazing, prescribed fire, roads, trails, weed management, oil and gas development, and unregulated recreation. Fire and grazing during the summer have the potential to damage actively growing plants and may reduce seed production. Grazing and prescribed fire outside the growing season may have beneficial impacts on this species by reducing competition and providing germination sites. Any herbicide use in the vicinity of these populations should be closely monitored.

Andean prairie-clover is recommended as a species-of-concern because

1. It is tracked by the KNHI.
2. It is a low density species throughout its range.
3. Within the range of the Andean prairie-clover, the Grasslands provide an important area of potential habitat.

Plan Components that provide for the Andean prairie-clover

Several components of the desired conditions expressed in the Plan would contribute to self-sustaining populations of Andean prairie-clover. Desired conditions in the Land Administration category provide for acquiring tracts of land that provide habitat for this species. The Desired conditions for the Sandsage Prairie and Canyonland ecosystems include periodic disturbance by livestock grazing and prescribed fires, which in turn can provide germination sites for this species.

Guidelines the Plan are designed to reduce factors detrimental to the Andean prairie-clover populations on the Grasslands, including ground-disturbing activities that affect known populations, livestock grazing during the flowering/fruited period, and the use of herbicides near known populations.

Colorado fraseria

Species evaluation

NatureServe (2006) ranks Colorado fraseria (*Frasera coloradensis*) as G3. The CNHP tracks this species and ranks it S3. Colorado fraseria is endemic to southeastern Colorado, including Baca and Las Animas Counties. There are ten records of this species on the Comanche. It was formerly on the Regional Forester Sensitive Species list. The CNHP has been tracking this species for many years because it has limited range and habitat in Colorado.

Colorado fraseria is found in dry, rocky outcrops and on sparsely vegetated slopes, white limestone breaks, and in pinyon-juniper woodlands and prairie. In the Planning Area habitat for this species occurs in the Shortgrass Prairie and Canyonland Ecosystems. Potential threats may include grazing, prescribed fire, roads, trails, and unregulated recreation. Fire and grazing have the potential to damage actively growing plants and so reduce seed production. Grazing and prescribed fire may have beneficial impacts on this species by reducing competition; fire releases nutrients stored in plant matter.

Privately-owned land is being converted from prairie to other uses, such as dry-land or irrigated cropland, or cattle feedlots. As a result, some of the best remaining habitat available for Colorado fraseria is on the Comanche. This species also warrants attention because it is a local endemic with a small known geographic range. The Grasslands provide consistent habitat quality and quantity for this plant.

Colorado fraseria is recommended as a species-of-concern because

1. It is endemic to southeastern Colorado.
2. It was formerly on the Regional Forester Sensitive Species list.
3. CNHP has been tracking this species for many years.

To ensure the species is sustainable within its small known geographic range, management actions may be necessary or desirable to provide the appropriate habitat conditions for Colorado fraseria.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions in the Plan would contribute to self-sustaining populations of Colorado fraseria. Under the Land Administration category, the potential for acquiring tracts of land with exposures of Dakota sandstone and Greenhorn limestone formations that provide habitat for this species would be managed to maintain conditions appropriate for the plant. Habitat restoration efforts would also benefit the species. Prescribed fire, weed management, and livestock grazing programs in the Shortgrass Prairie Ecosystem would be more efficiently managed on contiguous tracts of

NFS land. Well-managed prescribed fire and livestock grazing programs would help to maintain the vegetative conditions (10 to 25% cover) this species prefers. Prescribed fires and livestock grazing could be timed to avoid damage to plants during flowering and fruiting periods allowing seeds to develop and become established forming new plants. The OU Creek special area provides the best quality examples of habitat this species requires based on the large population present.

Objectives in the Plan provide details on how Grasslands management would maintain and improve habitat conditions for Colorado fraseria. During the next 15 years, shortgrass prairie habitats containing this species would be managed to maintain 10 to 25% vegetative cover. This can be accomplished through continued land management with livestock grazing and prescribed fire programs. These activities would provide enough ground disturbance to ensure seedling establishment and still maintain adequate vegetative cover for mature plants.

Guidelines in the Plan are included to reduce factors that would be detrimental to the sustainability of Colorado fraseria on the Grasslands. When considering land administration, tracts with known populations and high quality habitat should be addressed. When treating non-native invasive plant species, caution needs to be used in areas which have or may have this plant. Concentrations of livestock should be avoided at known sites for Colorado fraseria during its flowering period (June) and seed set (July) to ensure seed development.

Colorado gumweed

Species evaluation

NatureServe (2006) ranks Colorado gumweed (*Grindelia inornata*) as G2?, which suggests that this plant may require management actions to prevent listing under the ESA. This plant is a local endemic known only from seven counties in eastern Colorado, including the Grassland counties of Baca, Las Animas, and Otero. There are at least two records on the Comanche dating from 1997 (CNHP 2005).

Most known sites for Colorado gumweed are along roadsides. Habitat in the Planning Area for this species occurs in the Shortgrass Prairie (Timpas Unit) and in the Picket Wire Canyonlands and Bent Canyon Bluffs special area. The species is apparently tolerant of moderate disturbance. Although a habitat generalist, this species occurs at low density in its habitat. Management actions that may affect this species include grazing, prescribed fire, roads, trails, weed management, and unregulated recreation. Efforts should be made to maintain current populations by avoiding ground disturbance at known sites to protect established plants. Any herbicide use in the vicinity of these populations should be closely monitored. Searches should be conducted for additional plants in appropriate habitat. Soil disturbance may be necessary to provide seedbed for populations to expand.

Privately-owned land being converted from prairie to other uses, such as dry-land or irrigated cropland, or cattle feedlots, effectively reduce suitable habitat for Colorado

gumweed. As a result, some of the best remaining habitat available for this species is on the Comanche. This species also warrants management attention because it is a local endemic with a small known geographic range. Ensuring that habitat is available and is being managed appropriately for this species would help prevent a trend toward federal listing under the ESA. However, very little is known about this species' ecology, or the effects land management practices would have on individuals or populations.

Colorado gumweed is recommended as a species-of-concern because, although the effects of management are unknown, it appears to be tolerant (and may require) of moderate disturbance. Populations appear to be stable in the canyonland areas on and near the Comanche, and there are documented occurrences of this species in the Picket Wire Canyonlands of the Comanche.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions in the Plan would contribute to self-sustaining populations of Colorado gumweed. Desired conditions for the Shortgrass Prairie Ecosystem include areas that have experienced past disturbance (fire, intensive livestock grazing or both) but are now increasing in vegetative cover.

Objectives in the Plan provide details on how Grasslands management would maintain and improve habitat conditions for Colorado gumweed. during the next 15 years, shortgrass prairie habitats containing this species would be managed to maintain 40 to 80% vegetative cover. This can be accomplished through continued land management with livestock grazing and prescribed fire programs. These activities would provide periodic disturbance in order to ensure seedling establishment.

Guidelines in the Plan are designed to reduce factors detrimental to the sustainability of Colorado gumweed on the Grasslands, including the types of ground-disturbing activities that may affect known populations, livestock grazing during the flowering/fruitletting period, and the use of herbicides near known populations.

On the Comanche, management activities within the canyonland areas on the Timpas Unit are not expected to have any negative impact on this species' habitat. Because the species remains locally common, habitat in the portion of its range in and around the Comanche remains secure, and the species exhibits adaptability to the presence of humans, Plan components have not been identified to address Colorado gumweed habitat management at the species level. The Plan's desired conditions, objectives and guidelines for the Canyonland Ecosystem all contribute to sustaining habitat for the Colorado gumweed.

Colorado Springs evening-primrose

Species evaluation

NatureServe (2006) ranks the Colorado Springs evening-primrose (*Oenothera harringtonii*) as G2, which suggests that this plant may require management actions to

prevent listing under the ESA. The Colorado Springs evening-primrose is endemic to eastern Colorado, known only from Colorado Springs to Las Animas and Otero Counties (NatureServe 2006). There are two records from the Comanche dating from 1997, with additional records nearby (Ladyman 2005).

The Colorado Springs evening-primrose occurs in silty clay soils to loose rock or sandy soils in open grasslands, typically where vegetative cover is 20 – 50%. In the Planning Area, habitat for this species occurs in the Shortgrass Prairie Ecosystem. This species may have a relatively long life in the seed bank with widely variable numbers from year to year, but there are few known locations (17) and there is likely to be fewer than 400 extant plants (Ladyman 2005). Although a habitat generalist, this species occurs at low density in its habitat. As a result, management actions that may affect this species include grazing, prescribed fire, roads, trails, weed management, and unregulated recreation. Efforts should be made to maintain current populations by avoiding ground disturbance at known sites to protect established plants. Any herbicide use in the vicinity of these populations should be closely monitored. Searches should be conducted for additional plants in appropriate habitat. Soil disturbance may be necessary to provide seedbed for populations to expand.

Privately-owned land is being converted from prairie to other uses, such as dry-land or irrigated cropland, or cattle feedlots. As a result, some of the best remaining habitat available for Colorado Springs evening-primrose is on the Comanche. This species also warrants attention because it is a local endemic with a small known geographic range. Ensuring that habitat is available and is being managed appropriately for this species would help prevent a trend toward federal listing under the ESA.

The Colorado Springs evening-primrose is recommended as a species-of-concern because it is a local endemic plant with relatively few known individuals, and the most reliable habitat management is on the Comanche. To prevent listing under ESA, efforts should be made to maintain current populations by avoiding certain ground disturbing activities at known sites, and ensuring appropriate habitat is maintained for this species.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions in the Plan would contribute to self-sustaining populations of Colorado Springs evening-primrose. Desired Conditions in the Land Administration category provide for acquiring tracts of land that provide habitat for this species. The desired conditions for the Shortgrass Prairie Ecosystem specifically include maintenance of sparse, low-structure vegetation in and adjacent to existing populations of Colorado Springs evening-primrose. Maps of existing populations of this species on the Timpas Unit can be used to identify areas where these habitat conditions should be maintained and monitored.

Objectives in the Plan specific to the Shortgrass Prairie Ecosystem provide details on how Grasslands management would maintain and improve habitat conditions for Colorado Springs evening-primrose. The objective to maintain at least 0.5 – 5% of the

shortgrass ecosystem on the Timpas Unit affected by fire annually (see Fire Use Objectives) contributes to improved habitat for this species. An additional objective (see Livestock Grazing Administration) is to target the combined use of spring burning and grazing in areas where this species occurs, in order to contribute to habitat maintenance and expansion. These activities would provide enough ground disturbance to ensure seedling establishment.

Guidelines in the Plan are designed to reduce factors detrimental to the sustainability of Colorado Springs evening-primrose on the Grasslands, including the types of ground-disturbing activities that may affect known populations, livestock grazing during the flowering/fruitletting period, and the use of herbicides near known populations.

Rocky Mountain bladderpod

Species evaluation

NatureServe (2006) ranks Rocky Mountain bladderpod (*Lesquerella calcicola*) as G2, which suggests that this plant may require management actions to prevent listing under the ESA. This species is endemic to five counties in southeastern Colorado from the Arkansas River south to Mesa de Maya. Although this species has been reported from several locations near the Comanche (Hazlett 2004), there are no definitive records available.

Rocky Mountain bladderpod occurs in limestone and gypsum soils. In the Planning Area, habitat for this species occurs in the Shortgrass Prairie and Canyonland Ecosystems. It may be tolerant of light disturbance based on its habitat in limestone breaks. Potential threats may include roads, trails, and unregulated recreation.

Privately-owned land is being converted from prairie to other uses, such as dry-land or irrigated cropland, or single-family housing. As a result, some of the best remaining habitat available for Rocky Mountain bladderpod is on the Comanche. This species also warrants attention because it is a local endemic with a small known geographic range. The Grasslands provide consistent habitat quality and quantity for this plant. However, very little is known about this species' ecology, or the effects land management practices would have on individuals or populations.

Rocky Mountain bladderpod is not recommended as a species-of-concern because the effects of management are unknown and it is likely that Grassland management would have little or no impacts on its habitat.

There are no known populations on the Comanche, but the Grassland provides consistent habitat quality and quantity for this plant. If populations of this plant are found on the Comanche, consideration should be given to making this a species-of-concern.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions in the Plan would contribute to self-sustaining populations of Rocky Mountain bladderpod. Under the Land Administration category, the potential for acquiring tracts of land that provide habitat for this species would be managed to maintain conditions appropriate for the plant. Habitat restoration efforts would also benefit the species. Prescribed fire, weed management, and livestock grazing programs in the Shortgrass Prairie and Canyonland Ecosystems would be more efficiently be managed on contiguous tracts of NFS land. Well-managed prescribed fire and livestock grazing programs would help to maintain the vegetative conditions (10 to 25 percent cover) this species prefers. Prescribed fires and livestock grazing could be timed to avoid damage to plants during flowering and fruiting periods allowing seeds to develop and become established forming new plants.

Objectives in the Plan provides details how Grasslands management would maintain and improve habitat conditions for Rocky Mountain bladderpod. During the next 15 years, shortgrass prairie habitats containing this species would be managed to maintain 10 to 25% vegetative cover. This can be accomplished through continued land management with livestock grazing and prescribed fire programs. These activities would provide enough ground disturbance to ensure seedling establishment and still maintain adequate vegetative cover for mature plants.

Guidelines in the Plan are included to reduce factors that would be detrimental to the sustainability of Rocky Mountain bladderpod on the Grasslands. When considering land administration, tracts with known populations and high quality habitat should be addressed. When treating non-native invasive plant species, caution needs to be used in areas which have or may have this plant. Concentrations of livestock should be avoided at known sites for Rocky Mountain bladderpod during its flowering period (April through May) and seed set (late June) to ensure seed development.

On the Comanche, management activities within the Canyonland areas on the Timpas Unit are not expected to have any negative impact on this species' habitat. Because the species has not been found on the Comanche, and habitat in the portion of its range in and around the Comanche remains secure, Plan components have not been identified to address Rocky Mountain bladderpod habitat management at the species level. The Plan's desired conditions, objectives and guidelines for the Canyonland Ecosystem all contribute to sustaining habitat for the Rocky Mountain bladderpod.

Raven Ridge false goldenweed

Species evaluation

NatureServe (2006) ranks Raven Ridge false goldenweed (*Oonopsis foliosa* var. *monocephala*) as G2G3T2. The rounded rank is T2, which suggests that this plant may require management actions to prevent listing under the ESA. The CNHP tracks this species but ranks it SNR. It is reported as "Endemic to Las Animas County, Colorado,

but quite common in certain edaphic situations (e-mail from G. K. Brown, Univ. Wyoming, to K. Maybury 8/20/96)” by NatureServe (2006).

This plant is a local endemic to the Arkansas River valley, known from Las Animas and Baca counties in Colorado. In spite of a reported occurrence on the Timpas Unit of the Comanche, there are no definitive records of this plant on the Grasslands.

This plant inhabits shortgrass prairie; most records are on privately owned ranch land. In the Planning Area, habitat for this species occurs in the Shortgrass Prairie Ecosystem. It occurs frequently in tracked-vehicle training areas on the U.S. Army Pinyon Canyon Maneuver Site; this suggests that it is tolerant of moderate disturbance.

Privately-owned land is being converted from prairie to other uses, such as dry-land or irrigated cropland, or single family housing. As a result, some of the best remaining habitat available for Raven Ridge false goldenweed is on the Comanche. This species also warrants attention because it is a local endemic with a small known geographic range. The Grasslands provide consistent habitat quality and quantity for this plant.

Raven Ridge false goldenweed is recommended as a species-of-concern because it is a local endemic with a small known geographic range. There are no known populations on the Comanche, but the Timpas Unit of the Grassland provides consistent habitat quality and quantity for this plant.

Plan Components contributing to self-sustaining populations

Several components of the desired conditions in the Plan would contribute to self-sustaining populations of Raven Ridge false goldenweed. Under the Land Administration category, the potential for acquiring tracts of land that provide habitat for this species would be managed to maintain conditions appropriate for the plant. Habitat restoration efforts would also benefit the species. Prescribed fire, weed management, and livestock grazing programs would be more efficiently be managed on contiguous tracts of NFS land. Well-managed prescribed fire and livestock grazing programs would help to maintain the vegetative cover this species prefers. Prescribed fires and livestock grazing could be timed to avoid damage to plants during flowering and fruiting periods allowing seeds to develop and become established forming new plants.

Objectives in the Plan provide details on how Grasslands management would maintain and improve habitat conditions for Raven Ridge false goldenweed. During the next 15 years, shortgrass prairie habitats that may contain this species would be managed to maintain vegetative cover. This can be accomplished through continued land management with livestock grazing and prescribed fire programs. These activities would provide enough ground disturbance to ensure seedling establishment and still maintain adequate vegetative cover for mature plants.

Guidelines in the Plan are included to reduce factors that would be detrimental to the sustainability of Raven Ridge false goldenweed on the Grasslands. When considering land administration, tracts with known populations and high quality habitat should be

addressed. When treating non-native invasive plant species, caution needs to be used in areas which may have this plant. Concentrations of livestock should be avoided during its flowering period (June through August) to ensure seed development.

Species-of-Interest

Species-of-interest are defined as species for which the Responsible Official determines that management actions may be necessary or desirable to achieve ecological or other multiple use objectives (FSH 1909.12, 43.22c). The Planning Directives identified six potential sources of species to be considered for the species-of-interest list. The first five sources were all evaluated during the development of the Regional Forester’s Sensitive Species (RFSS) List for Region 2 of the Forest Service (USDA Forest Service, Rocky Mountain Region 2003), and the sixth source is species that are hunted or fished, and species of public interest including non-native invasive species (FSH 1909.12, 43.22c). Therefore, we used the RFSS list and a consideration of hunted, fished and invasive species to identify species to consider for the species-of-interest list for the Grasslands. One exception to this was non-vascular plants: bryophytes. Bryophytes were not evaluated during development of the RFSS list, but were evaluated for the Grasslands Planning process.

Table 1.

Common Name	Scientific Name	Seasonal Presence on Grasslands	Do the Grasslands include all or a portion of the known range of the species?	Does potential habitat were the species could reproduce exist on the Grasslands?
Vascular plant				
James’ beardtongue	<i>Penstemon jamesii</i>	None	No	No
Tamarisk	<i>Tamarix ramosissima</i>	Perennial	Yes	Yes
Non-vascular plant				
Anomodon moss	<i>Anomodon rostratus</i>	Perennial	Yes	Yes
Jaffueliobryum moss	<i>Jaffueliobryum raii</i>	Perennial	Yes	Yes

Species considered but not included on the Species-of-Interest list

James' beardtongue

James beardtongue (*Penstemon jamesii* Benth.) is a perennial herb in the figwort family (Scrophulariaceae). It flowers in April to June. It is found on sandy slopes in shortgrass prairies. It ranges from CO and KS, south to MN and TX. It is reported from Morton County, KS, where it is the likely result of an accidental introduction. It was found in 1970 and has not been reported since. There is also a record from Las Animas County, CO, but this is outside any of the ecological subsections occurring on the Grasslands as defined by McNab, et al. (2004). James Beardtongue is ranked G4 by NatureServe (2003). It is tracked by the Colorado Natural Heritage Program, and is ranked S1 in CO. In KS, it is ranked SX, last seen in 1970. Because the Grasslands are not within the known range of this species, it should not be carried forward as a species-of-interest.

Non-vascular Plants

There is a very limited amount of available information on the species presence, distribution, and abundance of the bryophytes and lichens in southeastern Colorado or southwestern Kansas. There are few specialists nationwide dealing with non-vascular plants and lichens. The single document readily available (Weber 2001) notes two rare or uncommon species of mosses that have been found in southeastern Colorado, Anomodon moss (*Anomodon rostratus*) and Jaffueliobryum moss (*Jaffueliobryum rauii*). Both of these species are at the edge of their range in that part of the state and are much more common elsewhere. They are found here in locations that are little affected by Grassland management activities. Plan components for the Canyonland ecosystem would provide for sustaining the rimrock habitat where these mosses are found. Therefore, these species should not be carried forward as species-of-interest.

Anomodon moss [*Anomodon rostratus* (Hedw.) Schimp.]

Anomodon moss is found in eastern North America, Central America, and Eurasia (Weber 2001). There is one documented occurrence of this moss in Baca County. This is at the extreme western edge of the species range. NatureServe (2006) ranks this species as G5, globally secure. In Colorado, it is ranked S1S3, indicating uncertainty of its distribution and abundance within the state.

Anomodon moss is found among rimrock cliffs in Baca County (Weber 2001). It is not known whether the known site has been observed in recent years. Because of the few visitors to cliff areas on the Grasslands, it is probable that there has been no change in the condition of the occurrence. The bryophyte flora of Colorado has been very little studied. As a result, it is likely that additional populations occur, but these would be found in the same rimrock habitat.

Jaffuelobryum moss [*Jaffuelobryum raii* (Aust.) Thér.]

Jaffuelobryum moss is an endemic of the Great Plains and the American southwest (Weber 2001). It ranges discontinuously from southern Alberta, throughout the southern Plains to southern California (Spence 2006). There is a small number of records from eastern Colorado. This area is along the western edge of the species range. NatureServe (2006) ranks this species as G4?, apparently secure. In Colorado, it is ranked S1S3, indicating uncertainty of its distribution and abundance within the state.

Jaffuelobryum moss is found in crevices in sandstone bedrock in Colorado (Weber 2001). In other areas, it also occurs on limestone, so may be looked for on that rock type on the Grasslands. The bryophyte flora of Colorado has been very little studied. As a result, it is likely that additional populations occur, but these would be found in the same rimrock habitat.

Species evaluated and included on the Species-of-Interest List

Tamarisk

Species evaluation

NatureServe (2005) ranks tamarisk (*Tamarix ramosissima*) as GNR. Tamarisk (also known as saltcedar) is on the Colorado State noxious weed list. It is native to Ukraine and Iraq east to China, Tibet, and Korea. It is locally abundant in several watersheds in eastern Colorado and western Kansas.

Tamarisk is most abundant in creek and river bottoms. Several areas, including the identified Picket Wire Canyonlands special area, infested with this plant are undergoing eradication treatments that use prescribed fire, mechanical, and chemical methods. Concern about tamarisk invasion was brought up in most of the existing conditions and trends reports in support of Plan development. Although numerous noxious weeds are locally present on the Grasslands, tamarisk has the greatest effect on a wide variety of resource areas on the Grasslands. Identifying tamarisk as a species-of-interest would enable tamarisk to serve as an indicator of progress made in riparian ecosystem restoration efforts, riparian wildlife habitat conditions, and improvement in range condition.

The Forest Service Fire Effects Information System for this species offers extensive and current information on life history, ecology, fire effects, and management.

Tamarisk is being recommended as a species-of-interest because it would serve as an indicator of progress made in riparian ecosystem restoration efforts, riparian wildlife habitat conditions, and improvement in range condition.

Plan Components contributing to tamarisk management

Several components of desired conditions in the Plan contribute to the management of tamarisk. Tamarisk's ability to spread and reestablish quickly from adjacent private land absolutely necessitates broad landscape scale treatment to ensure effective long term treatment. Tamarisk is the primary non-native invasive plant species that has affected riparian and aquatic ecosystems on the Grasslands. Tamarisk invasion has displaced native Plains cottonwood and willow species, and has altered the hydrology of the floodplain by using more water than the native vegetation it has replaced. Its ability to concentrate salts has produced changes in soil chemistry, further limiting native species establishment. Efforts to restore native plant communities in tamarisk-infested riparian areas have been initiated on both Grasslands.

One of the Plan objectives in the Riparian and Aquatic Ecosystem includes an average of 400 to 500 acres of tamarisk that would be treated for eradication annually.

References

- Colorado Natural Heritage Program. 2005. Records of species occurrence on Pike and San Isabel National Forest. Fort Collins, CO.
- Decker, K. (2006, April 24). *Asclepias uncialis* Greene (wheel milkweed): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/asclepiasuncialis.pdf> [8 August 2006]
- Hazlett, Donald L. 2004. Vascular plant species of the Comanche National Grassland in southeastern Colorado. Gen. Tech. Rep. RMRS-GTR-130. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 36 p.
- Ladyman, J.A.R. 2005. *Oenothera harringtonii* Wagner, Stockhouse & Klein (Colorado Springs evening-primrose): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/oenotheraharringtonii.pdf> (Accessed 1 February 2005.)
- Locklear, J.H. 1996. The biology, ecology and conservation of *Asclepias uncialis* Green in Colorado. Status report submitted to the Colorado Natural Areas Program and the Colorado native Plant Society. Nebraska Statewide Arboretum, University of Nebraska-Lincoln. Lincoln, NE.
- NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [Web application]. Version 4.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed 8 August 2006.)
- Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. Colorado rare plant field guide. Prepared for the Bureau of Land Management, the U.S. Forest Service, and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.
- Spence, J.R. 2006. Bryophyte flora of North America, provisional publication. Missouri Botanical Garden, St. Louis, MO. <http://www.mobot.org/plantscience/BFNA/bfnamenu.htm>. [3 August 2006]
- Weber, W.A. 2001. Rare cryptogams in Colorado. Unpublished report submitted to USDA Forest Service, Region 2, Lakewood, CO. From: W.A. Weber, Professor and Curator Emeritus, University of Colorado Museum, Boulder, CO. 18 pp.