

**Sensitive Plant Species Report
Gila National Forest
Travel Management Rule Implementation**

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Introduction

The specialist's report is a discussion of effects related to implementation of the proposed action or alternatives that are selected for the Gila National Forest Travel Management Project. Analysis for effects of motorized travel within areas of sensitive plants was conducted using GIS analysis, data and data sources that were put into road and vegetation layers to identify corridors through Sensitive Plant habitat. Sensitive Plant occurrences include all sites reported on the Gila National Forest. The majority of the data collected was acquired from the Natural Heritage New Mexico (NHNM) database, as well as, herbarium specimens and databases such as the New Mexico Biodiversity Collections Consortium (NMBCC). The spatial data the forest had was a spreadsheet with legal locations to the section level of plant observations. Few species have had comprehensive surveys conducted and the analysis was done based upon records available. Literature searches were conducted to determine the effects of motorized travel, dispersed camping and/or access may have upon each sensitive species. Indicators used to measure impacts to designated plants are motorized dispersed camping corridors and big game retrieval and motorized route off road parking area acres within the habitat types where these designated plants have recorded observations.

Compliance with the Forest Plan and other Regulatory Direction

The Forest Plan future desired conditions states “monitor management practices within occupied and potential habitat of plants listed as threatened, endangered or on the Regional Forester’s Sensitive Plant list. Manage sensitive species to sustain viability and prevent the need for Listing as threatened or endangered” (1982 Planning Rule) (36 CFR 219). In addition, the Forest Service Manual (FSM 2670.32) directs the need to:

1. Assist states in achieving their goals for conservation of endemic species.
2. Review programs and activities as part of the National Environmental Policy Act of 1969 process through a biological evaluation, to determine their potential effect on sensitive species.
3. Avoid or minimize impacts to species whose viability has been identified as a concern.
4. Analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.
5. Establish management objectives in cooperation with the states when projects on National Forest System lands may have a significant effect on sensitive species population numbers or distributions. Establish objectives for federal candidate species, in cooperation with the FWS or NOAA Fisheries and the states.

Many of the species that are on the Regional Forester Sensitive Species list have viability concerns for the following reasons:

- Loss or degradation of suitable habitat (for both terrestrial and aquatic species).
- The species is at the edge of its range.
- Little is known about the species and prudence dictates that the species be protected until more is known about the viability of the species.
- Excessive harvest/exploitation or persecution.
- Disease or interactions with non-native species.
- Combination of the aforementioned factors.

This Sensitive Species Plant Specialist report is based upon literature review (including the Gila National Forest Plan, as amended), Forest data, as well as a field assessment of habitat conditions. The techniques and methodologies used in this analysis consider the best available science. The analysis includes a summary of credible scientific evidence which is relevant to evaluating reasonably foreseeable impacts. The analysis also identifies methods used and references the scientific sources relied on. The conclusions are based on scientific analysis that after thorough review of relevant scientific information.

Existing Condition

For this analysis, acres of suitable habitat within vegetation types were used to determine the effects of Motorized Dispersed Camping (MDC), Motorized Big Game Retrieval and Motorized Route off Road Parking. The number of OHV users has grown substantially in the last two decades. Some of these routes are causing natural resource damage throughout the forest. The development of unauthorized routes is continuous and difficult to accurately measure. Since unauthorized routes are not engineered or analyzed, direct habitat damage occurs such as soil disturbance which can result in decreased vegetation cover and density. As soil compacts and erodes, roots can be exposed and eventually killed which can then lead to the establishment of weed species (Joslin and Youmans 1999). Loss of vegetation cover increases exposure of soil to wind and water erosion which reduces the ability of plants to reestablish an area. These effects can last decades or even centuries (Joslin and Youmans 1999). Plants are also vulnerable to direct damage from OHV by crushing, shearing and uprooting which can change plant characteristics by reducing flower and seed production and carbohydrate reserves which inhibits a plant to grow (Cole and Landres 1995). Motorized routes can create an edge habitat that promotes non-native encroachment and invasive plant species (Ouren et al. 2007, Watkins et al. 2003).

There is limited information associated with the plant species discussed in this document both range wide and site specific for the Gila National Forest. Global and state population rankings were used when available to identify the overall status of the species. The proliferation of unauthorized routes indicate increasing motorized intrusions into areas that previously had no motorized disturbances and that provide undisturbed habitat for plant species.

Affected Environment

Region 3 Regional Forester's Sensitive Plant Species

There are currently no plant species that occur within the Gila National Forest that are Threatened, Endangered, Proposed or Species of concern. The Regional Forester's Sensitive Plant species includes twenty two species that have the potential to occur within the Gila National Forest.

Designated sensitive plant species are identified as species for which population viability is a concern as evidenced by current or predicted downward trends in population numbers, density or habitat (FSM 2670.5). The Forest Service must implement management practices that ensure sensitive species do not become threatened or endangered and must implement management objectives for populations or habitat of sensitive species (FSM 2670.22)

Sensitive plant species that are expected or known to occur on the Gila National Forest are listed in table 1 below (USDA 2007).

Table 1. Southwestern regional forester’s sensitive plant species known or expected of occurring on Gila National Forest

Scientific Name	Common Name	Habitat Association	Reported Occurrences	Present in Analysis area
<i>Adenophyllum wrightii</i> var. <i>wrightii</i>	Wright’s Dogweed	Drainages within PJ woodlands (sandy/silty soils)	Grant County; 3 records, Wilderness and Silver City Ranger Districts (R.D.)	Yes
<i>Allium gooddingi</i> Ownbey	Goodding’s Onion	Mixed Conifer and Spruce Fir Zones, generally in north trending drainages	Occurrence records from Quemado, Glenwood, Wilderness and Reserve R.D., potential occurrence on the Black Range and Silver City R.D.s	Yes
<i>Anticlea mogollonensis</i>	Mogollon Death Camas	Understory of upper montane and subalpine coniferous forest. Often with Aspen.	Range mostly within Gila Wilderness, around the area of White Water Baldy.	Possible outside of Gila Wilderness
<i>Asclepias uncialis uncialis</i>	Greene Milkweed	yucca grasslands with scattered Juniper trees	No occurrence records on the Forest. Two occurrence records north of Silver City on private land.	NO
<i>Astragalus humistratus</i> var. <i>crispulus</i>	Villous Groundcover Milkvetch	Pine Forest on slopes, benches, and ledges. Vegetated Road Banks.	Occurrence record from Quemado RD, and private land adjacent to Quemado RD.	Yes
<i>Cirsium gilense</i>	Gila Thistle	Moist mountain meadows in coniferous forests.	Occurrence record on Glenwood R.D. within the wilderness, and one on Reserve R.D. outside of wilderness.	Yes
<i>Crataegus wootoniana</i>	Wooton’s Hawthorn	Canyon bottoms and forest understory in lower montane coniferous forests	Records for Grant and Catron counties on Glenwood, Wilderness, and Silver City R.D.s. Populations in Cherry Cr. and Telephone Canyon within the Pinos Altos Mtn Range.	Yes
<i>Cypripedium parviflorum pubescens</i>	Yellow Lady’s Slipper	Mid to high elev. riparian (50 to 100 yards from water in nearly full sunlight). Seeps. Fir, Aspen, and Pine Forest in full sunlight. Mesic slopes up to 60 degrees.	Records for Grant County within the Gila Wilderness, at Little Creek and Little Turkey Creek within wilderness	NO
<i>Hieracium fendleri</i> var. <i>mogollense</i>	Mogollon Hawkweed	Understory of montane coniferous forest.	No known occurrence records on the Gila NF.	NO
<i>Desmodium metcalfei</i>	Metcalf’s Tick – Trefoil	Rocky slopes, in canyons, and in ditches within oak/piñon-juniper woodlands/grasslands	Historically, in Grant and Sierra Counties in Caballo watershed. No recent records.	NO

Scientific Name	Common Name	Habitat Association	Reported Occurrences	Present in Analysis area
<i>Erigeron hessii</i>	Hess' Fleabane	Bedrock cracks in open areas of upper montane to subalpine conifer forests.	All known populations are within the Gila Wilderness area of White Water Baldy	NO
<i>Hexalectris spicata</i> <i>var. arizonica</i>	Arizona Coralroot	Heavy leaf litter under the drip line of oaks, pines, and junipers. Canyon bottoms and wooded canyon sides most commonly over limestone.	Hidalgo and Sierra Counties. No known occurrence records on the Gila NF.	NO
<i>Hieracium abscissum</i> <i>H. rusbyi</i>	Rusby Hawkweed	Mixed Conifer Forest.	Records from Black Range R.D., 1 record in Wilderness and 1 record outside (around Hoyt Cr. and Indian Cr.	Yes
<i>Packera cardamine</i> <i>Scenecio cardamine</i>	Heartleaf Groundsel	Understory of late seral spruce-fir	Nine records on Gila in Catron County. East of the Silver Creek Divide, south of Bursum around the area of trail 182.	Yes
<i>Penstemon linarioides</i> <i>ssp. maguirei</i>	Maguire's Beardtongue	Limestone cliffs in piñon-juniper woodlands.	Not seen in NM in over 100 yrs. Mining was cited as threat to the only known population in AZ.	No
<i>Penstemon metcalfei</i>	Metcalfe's Penstemon	Mixed Conifer & Spruce Fir - All stages.	13 occurrence records on Gila. Most records from Black Range R.D.	Yes
<i>Pteryxia davidsonii</i>	Davidson's Cliff Carrot	Moist, rocky areas including drainages and mountainsides. Sheer cliffs, wet areas (potentially wetlands, seeps, springs, and riparian areas).	Grant and Catron counties. 1 occurrence record along Mangas Creek in Grant County.	Yes
<i>Rumex orthoneurus</i>	Blumer's Dock	Middle to high elevation wetlands with moist, organic soil adjacent to perennial springs or streams in canyons or meadow situations.	Has been documented in Grant and Catron counties on the Forest; and probably occurs on all RD.	Yes
<i>Scrophularia macrantha</i>	Mimbres Figwort	Typically steep, rocky, usually north facing igneous cliffs and talus slopes.	35 occurrence records in Mimbres Watershed. Noonday, Railroad, and Upper Gallinas canyons. Silver City and Wilderness R.D.	Yes
<i>Stellaria porsildii</i>	Porsild's Starwort	Mixed conifer and aspen forests.	1 occurrence on Silver City R.D. near Signal Peak.	Yes

Scientific Name	Common Name	Habitat Association	Reported Occurrences	Present in Analysis area
<i>Talinum humile</i>	Pinos Altos Flame Flower	Madrean grassland, oak woodland, pinyon-oak woodland or pinyon-juniper woodland.	Grant and Hidalgo counties in NM. 6 occurrence records on Gila. Cherry Creek, beartooth drainages on the Silver City Ranger District; and Noonday drainage on the Wilderness Ranger District.	Yes
<i>Trifolium longipes</i> spp. <i>Neurophyllum</i>	Mogollon Clover	Riparian zones in mixed conifer forest. High elevation permanently wet meadows along streams, and springs.	Catron County NM; documented on the Black Range, Quemado, Glenwood, Wilderness, and Reserve Ranger Districts.	Yes

Effects Analysis

The following tables display the number of occurrences, on the Forest, for each plant species and the acres of potential area disturbed by motorized dispersed camping, motorized big game retrieval, and Motorized Route off Road Parking (50 ft.) for each alternative. Thirty-foot buffers were designated around each plant occurrence record and overlaid with geographic information data layers to determine if the known locations were within areas where OHV use would be allowed in each alternative.

The tables represent the number of known observations locations that have been documented within the Gila National Forest for each species. The acres are associated with points or polygons representing the observations. The tables were used to determine effects to species associated with alternatives. The observation points or polygons and roads were analyzed within GIS to determine the effects of Motorized Dispersed Camping, Motorized Big Game Retrieval and Motorized Route off Road Parking. Within the tables, each alternative shows a change in the number of known plant locations and acres within polygons around those sites that could potentially be impacted by motorized uses.

Heartleaf Groundsel (*Packera cardamine*) (= *Scenecio cardamine*)

Biological Requirements: The occurrence records document that this species is found at elevations ranging from 8,000 – 10,600 feet. This plant occurs in the understory of climax spruce-fir forest. Populations typically occur on inaccessible steep slopes in small and sporadic groups, but not infrequent in suitable habitat.

Trend and Potential Occurrence: This species has only been found in relatively small geographical area of southwest New Mexico and in an adjacent county in Arizona (NatureServe 2009). In New Mexico the species is reported to occur in the Mogollon Mountains of Catron County (New Mexico Rare Plant Technical Council 1999). The species has been reported from the White Mountains in Greenlee County, AZ. Natureserve (2009) document this species in the Upper Gila and San Francisco watersheds. A New Mexico Biodiversity Collection Consortium search located 9 occurrence records on the Forest. More specifically all occurrence records are east of the Silver Creek Divide, south of Bursum road around the area of trail 182 on the Wilderness Ranger District of the Gila National Forest. This species also has the potential to occur on the Reserve Ranger District around the Willow Creek area, and on the Glenwood Ranger District close to the Silver Creek Divide.

Table 2. Number and acres of potential disturbance to heartleaf groundsel by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	3	3	0	0	3	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.23	0.23	0	0	0.23	0
MDC – Number of recorded plant locations in area of potential disturbance	3	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.23	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	0	0	0	0	0	0
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0	0	0	0	0	0

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within mixed conifer and spruce-fir zones. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Heartleaf groundsel would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternatives B, C, and F all present some level of relative risk to the species at known or historical locations. Alternatives C and F are the same and present a slightly reduce relative risk to known sites, due to those sites only being potentially impacted by motorized big game retrieval, when compared to Alternative B. Alternatives D, E, and G will have no impact on known, occupied or historical sites.

Blumer’s Dock (Chiricahua dock) *Rumex orthoneurus*

Biological Requirements: The Arizona Heritage Data Base (AZGFD 2002) documents that this species occurs at elevations ranging from 4,480 to 9,660 feet. This species habitat is described as middle to high elevation wetlands with moist, organic soil adjacent to perennial springs or streams in canyons or meadow situations. It has been suggested that this species is intolerant of shading and is a poor competitor with other species in its habitat (AZGFD 2002). However, at some sites the plant seems to grow in deep shaded canyons (AZGFD 2002; and NatureServe, 2009).

Trend and Potential Occurrence: Blumer’s dock has a heritage global status of G3 (vulnerable), and is included as a Forest Service Region 3 sensitive species for the Apache-Sitgraves, Coconino, Coronado, Tonto, Carson, Lincoln, Santa Fe, and Gila National Forests. NatureServe (2009) reports that this species is more common than previously thought. *Rumex orthoneurus* was proposed for federal listing in 1998, but genetic studies and surveys resolved some taxonomic questions, showing that this species had a much larger distribution than previously thought (Center for Plant Conservation 2007). In the United States this species is currently known to occur in Arizona at Apache, Cochise, Coconino, and Gila counties, and in New Mexico at Catron, Mora, Otero, San Miguel, and Taos counties. On the Gila National Forest species account records document this species in Willow, Indian, and Gilita Creek on the Reserve Ranger District,

Pueblo Creek on the Glenwood Ranger District, and in the headwaters of Little Creek on the Wilderness Ranger District. This author has also noted this species in Turkey Run on the Black Range Ranger District and in the upper reaches of the West Fork of the Gila River on the Wilderness Ranger District. This species probably also occurs on the Silver City and Quemado Ranger Districts of the Gila National Forest, but observers have just failed to report its occurrence (AZGFD 2002; and NatureServe 2009).

Table 3. Number and acres of potential disturbance to Blumer's dock by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	6	6	0	0	6	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.45	0.45	0	0	0.45	0
MDC – Number of recorded plant locations in area of potential disturbance	6	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.45	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	2	2	2	2	2	2
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.04	0.04	0.04	0.04	0.04	0.04

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within high elevation wetlands with moist, organic soil adjacent to perennial springs or streams in canyons or meadows. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Blumer's Dock would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from either motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. All alternatives present some level of relative risk to the species at known or historical locations. Alternatives C and F are the same and present a slightly reduced relative risk to known sites, due to those sites not being impacted by motorized dispersed camping, when compared to Alternative B. Alternatives D, E, and G present the lowest relative risk to known sites where the species occurs because only two of the six sites could potentially be impacted by motorized uses. Alternatives D, E and G have two known locations that could be impacted by motorized uses however, all of these sites are located in areas where topography or vegetation would not allow off road use.

Davidson's Cliff Carrot (*Pteryxia davidsonii*)

Biological Requirements: The Arizona Heritage (AZGFD 2004) records document that this species occurs at elevations ranging from 6,500 – 8,000 feet. The plant community association includes: California Brickell-bush (*Brickellia californica*), Colorado Birch-leaved Mountain –mahogany (*Cercocarpus montanus*), Arizona beardtongue (*Penstemon pinifolius*), Cane prickly-pear (*Opuntia spinosior*), Arizona

rockdaisy (*Perityle coronopifolia*), Pinyon pine sp., Muttongrass (*Poa fendleriana*), Silver-leaf oak (*Quercus hypoleuoides*), Net-leaf oak (*Quercus reticulata*), and Fleshy-fruit Yucca (*Yucca baccata*) (AZGFD 2004).

Moist rocky areas seem to be important to this species. This species has been documented to occur on sheer cliffs; in rocky, damp, drainages; and mountain sides. The literature documents that the species grows in wet areas (potentially wetlands, seeps, springs, and riparian areas) (AZGFD 2004).

Trend and Potential Occurrence: This species has only been found in relatively small geographical area of southwest New Mexico including Socorro, Catron, and Grant counties, and in an adjacent Greenlee County, AZ (NatureServe 2009). *Pteryxia davidsonii* has been rarely collected or reported. NatureServe (2009) estimates the occurrences records at 6-20. Heritage (AZGFD 2004) records document this species in the Upper Gila-Mangas and San Francisco watersheds. More specifically heritage records document this species adjacent to Silver Creek and in the headwaters of Spring Canyon on Bear Mountain on the Gila National Forest (AZGFD 2004). Forest records also indicate that pre – 1970 this species was also found in a small tributary to Mangas Creek in the northeast corner of the Burro Mountains. The Bear Mountain and Mangas Creek locations are on the Silver City Ranger District of the Gila National Forest in Grant County, NM. The Silver Creek location is on the Glenwood Ranger District of the Gila National Forest in Catron County, NM.

Table 4. Number and acres of potential disturbance to Davidson’s cliff carrot by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	3	3	0	0	3	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.23	0.23	0	0	0.23	0
MDC – Number of recorded plant locations in area of potential disturbance	3	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.23	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	0	0	0	0	0	0
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0	0	0	0	0	0

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within moist rocky areas. This species has been documented to occur on sheer cliffs; in rocky, damp, drainages; and mountain sides. The literature documents that the species grows in wet areas (potentially wetlands, seeps, springs, and riparian areas). Given the habitat where this species has been found, motorized access would have limited, if any impacts to the species. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Davidson’s Cliff Carrot would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest

relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternatives B, C, and F all present some level of relative risk to the species at known or historical locations. Alternatives C and F are the same and present a slightly reduce relative risk to known sites, due to those sites only being potentially impacted by motorized big game retrieval, when compared to Alternative B. Alternatives D, E, and G will have no impact on known, occupied or historical sites.

Gila Thistle (*Cirsium gilense*)

Biological Requirements: This species prefers moist mountain meadows in coniferous forests at elevations ranging from 7,000 to 8,000 feet (NMRPTC 1999). The boundaries of this species range are unknown at this time. Species is often found within disturbed areas.

Trend and Potential Occurrence: *Cirsium gilense* is listed as a Species of Concern for both the USFWS and the State of New Mexico (NatureServe 2009), and as a R3 sensitive species. Its global ranking is G3G5Q; Vulnerable-Secure with questionable taxonomy (NMRPTC 1999). Gila Thistle was historically found in the upper San Francisco and Gila drainages, Catron County, New Mexico and in the adjacent White Mountains of Arizona. It is thought to be possibly extirpated in both states (Natureserve 2009).

Table 5. Number and acres of potential disturbance to Gila thistle by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	1	1	0	0	1	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0.08	0	0	0.08	0
MDC – Number of recorded plant locations in area of potential disturbance	1	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	0	0	0	0	0	0
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0	0	0	0	0	0

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within coniferous forests in moist mountain meadows. It is thought that it could possibly be extirpated. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Gila Thistle would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternatives B, C, and F all present some level of relative risk to the species at known or historical locations. Alternatives C and F are the same and present a slightly reduce relative risk to known sites, due to those sites only being potentially impacted by

motorized big game retrieval, when compared to Alternative B. Alternatives D, E, and G will have no impact on known, occupied or historical sites.

Goodding’s Onion (*Allium gooddingi* Ownbey)

Biological Requirements: Gooddings onion occurs within mixed conifer and spruce-fir zones, generally in north-trending drainages at elevations ranging from 7,500 to 11,250 feet (CPC 2007). Most sites are shaded to varying degrees, on slopes or in drainages or narrow canyons, and are usually in either primary or secondary stream courses. Soils which support this species are basaltic or rhyolitic with the upper horizon comprised of loamy alluvium with a high organic content (CPC 2007).

Trend and Potential Occurrence: This species range stretches from the White Mountains of Arizona to the Mogollon Mountains of New Mexico. There are also three isolated locations: the Santa Catalina Mountains of southern Arizona, near Sierra Blanca Peak in southern New Mexico, and the Chuska Mountains that straddle the Arizona/New Mexico border (CPC 2007). Most of these sites are on national forest land with a few on Indian reservation land. Bearallow Mountain, Gilita Creek, Indian Creek, and Little Turkey Creek are a few of the areas with records of this species on the Gila National Forest. Due in part to the success of a goodding’s onion conservation agreement and management actions between agencies this species was removed from the candidate list for federal protection in 2000 (CPC 2007). It is now a R3 Sensitive species for the USFS, and a national ranking of apparently secure (G4) (CPC 2007).

Table 6. Number and acres of potential disturbance to Goodding’s onion by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	33	31	1	0	20	2
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	18.02	17.72	0.08	0	13.83	0.21
MDC – Number of recorded plant locations in area of potential disturbance	33	2	1	0	2	2
MDC – Acres of potential disturbance by OHV use at recorded plant locations	18.02	0.21	0.08	0	0.21	0.21
ORP – Number of recorded plant locations in area of potential disturbance	2	2	0	1	2	2
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.15	0.15	0	0.08	0.15	0.15

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within mixed conifer and spruce-fir zones. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Goodding’s Onion would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternative C also presents a high relative risk due to thirty-one of thirty-three known sites where the species occurs having the potential of being affected by motorized uses. Alternative F reduces the relative risk below that of Alternatives B and C but still presents

risk to twenty of thirty-three known sites where the species is known to occur. Alternatives E and G are similar. However, Alternative E presents the lowest relative risk to this species due to only one of thirty-three known locations for the species being potentially affected by motorized uses.

Villous Groundcover Milkvetch (*Astragalus humistratus* var. *crispulus*)

Biological Requirements: This species is found within slopes, benches, and ledges in xeric pine forest. It also occurs in open vegetated road banks (NMRPTC 1999). The species is found in sandy soils of volcanic origin (NMRPTC 1999).

Trend and Potential Occurrence: *Astragalus humistratus* var. *crispulus* is known from only watershed in Catron County, New Mexico and southeastern Apache County, Arizona. It is a species of concern for the USFWS and for the state of NM. It is listed as a R3 sensitive species for the USFS (NMRPTC 2005). Globally it is ranked T3; vulnerable (Natureserve 2009).

Table 7. Number and acres of potential disturbance to villous groundcover milkvetch by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	1	0	0	0	0	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0	0	0	0	0
MDC – Number of recorded plant locations in area of potential disturbance	1	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	0	0	0	0	0	0
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0	0	0	0	0	0

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within xeric pine forest and open vegetated road banks. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Villous groundcover milkvetch would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from either motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternatives C, D, E, F, and G will have no impact on known locations where this species occurs.

Metcalf’s Penstemon (*Penstemon metcalfei*)

Biological Requirements: Presently this species is documented to occur at elevations ranging from 6,600 – 9,500 feet (NMRPTC 1999). This penstemon is typically associated with cliff or steep slope north-facing habitat, but can be found in east-facing slopes and canyon bottoms; in Rocky Mountain lower and upper montane coniferous forest (NMBCC, 2009).

Trend and Potential Occurrence: Metcalfe’s Penstemon is considered endemic to southwest New Mexico (NatureServe, 2009). The New Mexico Biodiversity Collections Consortium (NMBCC 2009) database identifies 13 occurrence records for this species. This species has only been found in the Black Range primarily in Sierra County and at one site in Grant County, NM. The Sierra County occurrence records are from Trujillo, Middle Percha, and Percha canyons on the Black Range R.D. of the Gila National Forest. The one record for Grant County is at the head of Quaking Aspen Canyon on the Wilderness R.D.

Table 8. Number and acres of potential disturbance to Metcalfe’s penstemon by alternative

Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	6	1	0	0	0	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.40	0.08	0	0	0	0
MDC – Number of recorded plant locations in area of potential disturbance	6	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.40	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	0	0	0	0	0	0
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.40	0	0	0	0	0

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within canyon bottoms and east facing slopes. However, specimens have been taken on cliffs and or steep slopes on a north-facing aspect. Given the habitat where this species has been found, motorized access would have limited, if any impacts to the species. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Metcalfe’s Penstemon would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from either motorized uses during big game retrieval, dispersed camping, or parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternative C presents a reduced relative risk when compared to Alternative B due to only one of six known locations for the species being potentially impacted due to motorized uses. Alternatives D, E, F, and G will not present any relative risk, due to motorized uses, to known locations for the species and will have no impact on known locations where this species occurs.

Rusby Hawkweed (Hieracium abscissum) (H. rusbyi)

Biological Requirements: The Arizona Heritage Database (AZGFD 2004) documents that this species occurs at elevations ranging from 8,800 to 9,300 feet. This species habitat is described as high elevation areas within mixed conifer forests. Associated genera and species include: *Pinus* (pine), *Alnus* (alder), *Quercus* spp. (oak), and *Juniperus deppeana* (alligator juniper).

Trend and Potential Occurrence: Rusby Hawkweed has a heritage global status of G2 (Imperiled), and is included as a Forest Service Region 3 sensitive species for the Coronado, and Gila National Forests. NatureServe (2009) reports, that in the United States this species is endemic to southeastern Arizona and adjacent areas in New Mexico. The Arizona Game and Fish Department Heritage database (AZGFD 2004) identifies that in Arizona this species is currently known from Cochise, and Graham counties. New Mexico Biodiversity Collections Consortium (NMBCC (2007) identifies that this hawkweed occurs in Catron, and Sierra counties, New Mexico. The Southwest Region of the Forest Service Regional Foresters Sensitive Species list also identifies that this species occurs in Grant County, New Mexico. On the Gila National Forest, species account records document this species near Hoyt Creek and in Indian Creek Canyon. Both locations are on the Black Range Ranger District.

Table 9. Number and acres of potential disturbance to Rusby hawkweed by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	1	1	0	0	1	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0.08	0	0	0.08	0
MDC – Number of recorded plant locations in area of potential disturbance	1	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	1	1	1	1	1	1
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.08	0.08	0.08	0.08	0.08	0.08

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within high elevation and mixed conifer forests. Given the habitat where this species has been found, motorized access would have limited, if any impacts to the species. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Rusby Hawkweed would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternatives C and F reduce relative risk slightly when compared to Alternative B due to one known site being protected from motorized use. Alternatives D, E, and G are the same and present the lowest level of relative risk to known sites for the species. However, all alternatives present some level of risk to the single known occupied site that is within an area potentially impacted by motorized use.

Mimbres Figwort (*Scrophularia macrantha*)

Biological Requirements: Presently this species is documented to occur at elevations ranging from 6,500 – 8,200 feet (NMRPTC 1999). Typically this species is associated with steep, rocky, usually north facing igneous cliffs and talus slopes. It is occasionally found in moist canyon bottoms, pinyon-juniper woodland and lower montane coniferous forest (NMRPTC 1999; NMBCC 2009).

Trend and Potential Occurrence: Mimbres Figwort is considered endemic to southwest New Mexico (NatureServe, 2009). It has been documented in both Grant and Luna counties. The New Mexico Biodiversity Collections Consortium (NMBCC) (2009) database identifies 37 occurrence records for this species, occurring mainly in three areas on the Gila National Forest and two areas off the forest, all flow into the Mimbres Watershed. On the Gila this species has been documented in Noonday, Railroad, and Upper Gallinas canyons. These occurrences' are on both the Silver City and Wilderness Ranger Districts. Off the Gila the species occurs in the Cooks Peak and Kneeling Nun areas (NMRPTC 1999).

Table 10. Number and acres of potential disturbance to Mimbres figwort

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	23	20	0	0	20	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	1.67	1.44	0	0	1.44	0
MDC – Number of recorded plant locations in area of potential disturbance	23	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	1.67	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	5	5	5	5	5	5
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.11	0.11	0.11	0.11	0.11	0.11

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

Given the habitat where this species is typically found on, steep, rocky, usually north facing igneous cliffs and talus slopes, motorized access would have limited, if any impacts to the species. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Mimbres Figwort would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternatives C and F are the same and present a slightly reduce relative risk to known sites by reducing the number of known locations that could potentially be impacted by motorized uses from twenty-three to twenty. Alternatives D, E, and G reduce the number of known sites that may be impacted by motorized uses from twenty-three to five and present the lowest relative risk to the species.

Pinos Altos Flame Flower (*Talinum humile*)

Biological Requirements: Most location records document that this species occurs at elevations ranging from 5,000 to 6,000 feet. NatureServe (2009) documents that this species occurs on rocky south facing slopes at about 7,000 ft. in elevation. The Arizona Game and Fish Heritage Data Management System (AZGFD (2004) documents an elevation range of 6,000 – 8,000 ft. for *Talinum humile*.

The plant communities this species is typically associated with are madrean grassland, oak woodland, pinyon-oak woodland or pinyon-juniper woodland, often with *Nolina micorarpa* and *Agave parryii* (AZGFD, 2004; NMRPTC, 1999; and NatureServe, 2009). The substrate this flame flower occurs in has been described as shallow, coarse, rhyolitic soil terraces overlying bedrock, where it is free from competition from other perennial plants; or in pockets of soil that accumulate among rhyolite boulders and outcrops (AZGFD, 2004; and NMRPTC, 1999).

Trend and Potential Occurrence: Pinos Altos Flame Flower has a heritage global status of G2 (imperiled) (NatureServe 2009), and is included as a Forest Service Region 3 sensitive species for the Coronado and Gila National Forests. NatureServe (2009) reports that this species was once common, but it is now becoming rare. In the United States this species is currently only known to occur in New Mexico at Grant and Hidalgo counties and in Arizona at Santa Cruz County (NatureServe 2009). NatureServe (2009) identifies seven occurrences for this species in New Mexico six of which occur on the Gila National Forest. The Arizona Game and Fish heritage database (AZGFD 2004) identifies two occurrence records in Arizona, and several localities in Durango and western Chihuahua, Mexico. *Peranthus humile* has been documented in the Cherry Creek and Beartooth drainages on the Silver City Ranger District; and Noonday drainage on the Wilderness Ranger District.

Table 11. Number and acres of potential disturbance to Pinos Altos flame flower by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	9	8	0	0	6	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	3.87	3.8	0	0	3.65	0
MDC – Number of recorded plant locations in area of potential disturbance	9	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	3.87	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	4	4	4	4	4	4
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.11	0.11	0.11	0.11	0.11	0.11

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

Given the habitat where this species has been found, rocky south facing slopes or pockets of soil that accumulate among rhyolite boulders and outcrops, motorized access would have limited, if any impacts to the species. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Pinos Altos Flame Flower would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping activities. Alternatives C and F are similar and present a slightly reduce relative risk, when compared to Alternative B, to known sites by reducing the number of known locations that could potentially be impacted by motorized uses. Alternatives D, E, and G are the same and reduce the number of known sites that may be impacted by motorized uses from nine to four. Alternatives D,E, and G prevent impacts from motorized big game retrieval and dispersed camping and present the lowest relative risk to the species.

Porsild's Starwort (*Stellaria porsildii*)

Biological Requirements: This species is documented to occur at elevations ranging from 7,900 to 8,200 feet in shade and partially open understory vegetation of mixed conifer and aspen forests (NMRPTC 1999). This plant has also been documented occasionally scattered along roadsides with steep, loamy and rocky embankments. In Arizona, it is documented to occur at the edge of meadows in Madrean Montane Conifer Forest communities (AZGFD 2004). Associated plants in New Mexico include: *Frageria* sp. (), *Lupinus* sp. (lupine), *Pinus* sp. (pine), *Populus tremuloides* (quaking aspen), *Pseudotsuga menziesii* (Douglas-fir), *Pteridium* sp. (fern), *Quercus* sp. (oak), *Robinia neomexicana* (New Mexico locust), *Senecio* sp. (groundsel), *Smilacina* (=Maianthemum) sp. (Solomon's-plume), *Vicia* sp. (vetch), and *Viola* sp. (violet) (AZGFD, 2004).

Trend and Potential Occurrence: *Stellaria porsildii* has a heritage global status of G1 (critically imperiled) (NatureServe 2009). This species is also a Forest Service Region 3 sensitive species for the Coronado and Gila National Forests. The species is fairly recently described and known only from the Chiricahua Mountains of Arizona and the Pinos Altos Mountains of New Mexico (NMRPTC 1999). In New Mexico this species occurs in Grant County, and in Arizona in Cochise County (NMRPTC 1999). On the Gila National Forest this species occurs just below Signal Peak on a western facing slope on the Silver City Ranger District.

Table 12. Number and acres of potential disturbance to Porsild's starwort by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	8	7	3	0	6	3
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.53	0.49	0.21	0	0.45	0.21
MDC – Number of recorded plant locations in area of potential disturbance	8	3	3	0	3	3
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.53	0.21	0.21	0	0.21	0.21
ORP – Number of recorded plant locations in area of potential disturbance	2	2	2	2	2	2
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.15	0.15	0.15	0.15	0.15	0.15

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within mixed conifer and aspen forests. It has also been documented along roadsides with steep, loamy and rocky embankments. Cross-country travel is being eliminated in these

alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Porsild's Starwort would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternative C also presents a high relative risk due to seven of eight known sites where the species occurs having the potential of being affected by motorized uses. Alternative F reduces the relative risk below that of Alternatives B and C but still presents risk to six of eight known sites where the species is known to occur. Alternatives D and G present a lower relative risk to the species than Alternatives B, C, and F. Alternative E presents the lowest relative risk to this species due to only two of eight known locations for the species being potentially affected by motorized uses. Alternatives D, E and G have three known locations that could be impacted by motorized uses however, only one of these locations is located in an area where topography or vegetation would allow off road use.

Mogollon Clover (*Trifolium longipes* spp. *Neurophyllum*) (= *T. neurophyllum*)

Biological Requirements: The location records document that this species can occur at elevations ranging from 6,500 – 9,000 feet. The plant community this species is typically associated with is riparian zones in mixed conifer forest. This species preferred habitat is high elevation permanently wet meadows along streams, and springs (NMRPTC 1999). However, several individuals in Arizona have been found in relatively dry conditions under a ponderosa pine canopy (AZGFD, 2002).

Trend and Potential Occurrence: Mogollon Clover has a heritage global status of G2 (imperiled) (NatureServe 2009), and is included as a Forest Service Region 3 sensitive species for the Apache-Sitgraves and Gila National Forests. This species is currently only known to occur in Catron County, NM and in Arizona at Greenlee and Apache counties (NatureServe 2009). NatureServe (2009) document this species in the San Francisco, Carrizo Wash, and Black watersheds. Currently, this species occurs in approximately 19 locations in Arizona, and 20 in New Mexico (NMRPTC, 1999; AZGFD, 2002). Prior to the introduction of large numbers of livestock in the early 1900s this species is thought to have been far more abundant (NatureServe, 2009). In New Mexico one relative large population is known to have been extirpated (AZGFD 2002). This species has potential habitat on all of the Ranger Districts on the Gila National Forest, and has been documented on the Black Range, Quemado, Glenwood, Wilderness, and Reserve Ranger Districts.

Table 13. Number and acres of potential disturbance to Mogollon clover by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	26	25	4	0	21	4
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	1.89	1.85	0.25	0	1.59	0.25
MDC – Number of recorded plant locations in area of potential disturbance	26	4	4	0	4	4
MDC – Acres of potential disturbance by OHV use at recorded plant locations	1.89	0.25	0.25	0	0.25	0.25
ORP – Number of recorded plant locations in area of potential disturbance	2	2	2	2	2	2
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0.11	0.11	0.11	0.11	0.11	0.11

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within riparian zones in mixed conifer forest. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Mogollon Clover would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping and parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping. Alternative C also presents a high relative risk due to twenty-five of twenty-six known sites where the species occurs having the potential of being affected by motorized uses. Alternative F reduces the relative risk below that of Alternatives B and C but still presents risk to twenty-one of twenty-six known sites where the species is known to occur. Alternatives D and G are the same and present a lower relative risk to the species than Alternatives B, C, and F. Alternative E presents the lowest relative risk to this species due to only two of twenty-six known locations for the species being potentially affected by motorized uses.

Wooton’s Hawthorn (*Crataegus wootoniana*)

Biological Requirements: Wooton’s Hawthorn occurs mainly in canyon bottoms and forest understory in lower montane coniferous forests at elevations ranging from 6,500-8,000 feet (NMRPTC 1999).

Trend and Potential Occurrence: Range of the species includes Catron, Grant and Lincoln counties in New Mexico (NMRPTC 1999). On the Gila National Forest documented populations include Cherry Creek, and Telephone Canyon, both of which are on the Pinos Altos Range. These specimens were documented in 1999 and 1997 respectively (NHNM 2008).

Table 14. Number and acres of potential disturbance to Wooton’s hawthorn by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	3	3	0	0	3	0
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	1.60	1.60	0	0	1.60	0
MDC – Number of recorded plant locations in area of potential disturbance	3	0	0	0	0	0
MDC – Acres of potential disturbance by OHV use at recorded plant locations	1.60	0	0	0	0	0
ORP – Number of recorded plant locations in area of potential disturbance	1	1	1	1	1	1
ORP – Acres of potential disturbance by OHV use at recorded plant locations	1.09	1.09	1.09	1.09	1.09	1.09

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within canyon bottoms in lower montane mixed coniferous forests. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping, the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval would decrease the potential that Wooton’s Hawthorn would be impacted by motorized vehicles.

All of the action alternatives reduce the relative risk of disturbance to this species from motorized uses during big game retrieval, dispersed camping or parking activities. Alternative B presents the highest relative risk to known sites where the species occurs due to those sites being open to motorized big game retrieval, off road travel, and dispersed camping activities. Alternatives C and F are similar and present a slightly reduce relative risk, when compared to Alternative B, to known sites by reducing the number of known locations that could potentially be impacted by motorized dispersed camping. Alternatives D, E, and G are the same and reduce the number of known sites that may be impacted by motorized uses from three to one. Alternatives D, E, and G prevent impacts from motorized big game retrieval and dispersed camping and present the lowest relative risk to the species.

Wright’s Dogweed (*Adenophyllum wrightii* var. *wrightii*)

Biological Requirements: This species occurs within pinion-juniper woodlands at elevations ranging from 7,000-7,200 feet in New Mexico. Species is found in sandy or silty soils and drainages.

Trend and Potential Occurrence: This plant was formerly known from a few very old collections made near the Santa Rita copper mines and in the Black Range, New Mexico, near Springerville, Arizona, and in Chihuahua, Mexico (NMRPTC 1999). It was rediscovered in New Mexico in 1999 in the same general area as plants collected in 1880. The rediscovered populations are healthy and plants appear to be reproducing normally (NMRPTC 1999). During the abnormally wet summer of 2006, numerous populations of this plant were discovered in Grant and Sierra counties, New Mexico (Gila Flora 2009) It is now considered to be common within its range in New Mexico (NMRPTC 1999). In 2007 populations of this species were also found in Chihuahua, Mexico. Photos were also taken of this species on September 10, 2008 by Russ Kleinman on the Georgetown Road on the Pinos Altos Range (GilaFlora

2009). This species is a R3 sensitive species for the USFS and a species of concern for the USFWS. Its ranking globally is under consideration.

Table 15. Number and acres of potential disturbance to Wright’s dogweed by alternative

Potential Disturbance	Alt.B	Alt.C	Alt.D	Alt.E	Alt.F	Alt.G
MBGR – Number of recorded plant locations in area of potential disturbance	3	3	3	0	3	3
MBGR – Acres of potential disturbance by OHV use at recorded plant locations	0.23	0.23	0.23	0	0.23	0.23
MDC – Number of recorded plant locations in area of potential disturbance	3	3	3	0	3	3
MDC – Acres of potential disturbance by OHV use at recorded plant locations	0.23	0.23	0.23	0	0.23	0.23
ORP – Number of recorded plant locations in area of potential disturbance	0	0	0	0	0	0
ORP – Acres of potential disturbance by OHV use at recorded plant locations	0	0	0	0	0	0

MBGR=Motorized big game retrieval, MDC=Motorized dispersed camping in designated corridors, ORP=Off road parking within 1 vehicle length of road.

Comparison of Alternatives

The species is likely to occur within habitat of pinion/juniper with sandy or silty soils in which this species inhabits. Cross-country travel is being eliminated in these alternatives compared to the No Action Alternative. The elimination of acres available for cross-country travel, the decrease in acres available for Motorized Dispersed Camping (MDC), the decrease in motorized routes and the decrease in acres available for Motorized Big Game Retrieval (MBGR) would decrease the potential that Wright’s Dogweed would be impacted by motorized vehicles.

Alternatives B, C, D, F, and G are the same and present potential risk to all known sites where the species occurs by motorized uses during big game retrieval and dispersed camping. Alternative E eliminates risk to the species by not allowing off road uses at the known sites for the species.

Species with known locations only in Wilderness

Mogollon Death Camas (*Anticlea mogollonensis*)

Biological Requirements: This species is often found within aspen and occurs at elevations ranging from 8,700-10,500 feet (NMRPTC 1999). Species is found in organic soils in understory of upper montane and subalpine coniferous forests.

Trend and Potential Occurrence: Mogollon death camas is known only from the Mogollon Mountains in the area of White Water Baldy and adjacent peaks. Most of its range is within the northwest corner of the Gila Wilderness where it is a common and often abundant forest understory species. *Anticlea mogollonensis* was photographed along Bursum road in Catron County in August of 2008 and again in August of 2009 (Sivinski 2009). This species is listed as a species of concern for both the USFWS and the state of NM (NMRPTC 1999). It is a R3 sensitive species for the USFS and is ranked at G3 globally (NMRPTC 2009). The Whitewater-Baldy fire of 2012 likely destroyed much of the habitat that this species is known from. The species response to fire has not been documented.

Yellow Lady's Slipper (*Cypripedium parviflorum pubescens*)

Biological Requirements: The slipper grows in moderate shade to nearly full sun in fir, pine and aspen forests at elevations ranging from 6,000 to 9,500 feet in elevation (Mergen 2006; Coleman 2002). It most often grows just above the banks of streams, usually 50-100 yards from water (NatureServe 2009).

Typically grows on mesic slopes up to 60 degrees; facing east to northeast and covered with lush growth less than a foot tall (AZGFD 2005). It is often associated with blue berries (*Vaccinium* spp.), shooting stars (*Dodecatheon* spp.) and several species of daises. *Lilium* spp are often found in the same area (Coleman 2002). *Cypripedium* habitat also includes dripping seeps on steep to moderate sloped canyon walls where the soil is saturated (Coleman 2002). The seeps are surrounded by pine and fir but the plants are in full sun much of the day.

Trend and Potential Occurrence: This is a species of concern for the USFWS, an endangered species for the State of NM (NMRPTC 1999), and a Sensitive species for the USFS. This species is only known in two locations on the Gila National Forest. These locations are Little Creek and Little Turkey Creek within the Gila Wilderness, Grant County, NM (AZGFD 2005).

Hess' Fleabane (*Erigeron hessii*)

Biological Requirements: Hess' fleabane grows from bedrock cracks in open areas in upper montane to subalpine conifer forests at elevations ranging from 9,500-10,200 feet (NMRPTC 2009).

Trend and Potential Occurrence: Hess' fleabane is ranked G1 (imperiled) globally (NMRPTC 1999), *endangered* by the state of New Mexico and *sensitive* on the Gila National Forest, NM. It is considered a *species of concern* by the USFWS (NMRPTC 1999). Only two populations are known in the area of Whitewater Baldy in the Gila Wilderness of the Gila National Forest, Southwest New Mexico. Each population consists of only a few hundred plants (NMRPTC 1999).

Mogollon Hawkweed (*Hieracium fendleri* var. *mogollense*)

Biological Requirements: No information was located related to the elevational range for this species. This plant has been collected only a few times and much about it is uncertain. The habitat requirements are possibly similar to *Hieracium fendleri*, which is an understory plant in montane coniferous forest (NMRPTC 1999).

Trend and Potential Occurrence: Mogollon Hawkweed has a heritage global status of G5T3 (vulnerable) (NatureServe 2009). This species is a Forest Service Region 3 sensitive species for the Apache-Sitgraves and Gila National Forests. It is currently only known from Catron County, NM and Apache County, AZ. No site specific location information was found for Mogollon Hawkweed so it is unknown where on the Gila National Forest this species occurs.

These species are only known to occur within the Gila wilderness where motorized travel is prohibited. Mogollon death camas and Hess' fleabane are known only from the Whitewater baldy area and yellow lady's slipper from Little Creek. Motorized travel would have no impact to these species.

Comparison of Alternatives

All alternatives would have **No Impact** on known locations for Mogollon Death Camas, Yellow lady's slipper, Hess' fleabane, and Mogollon hawkweed due to all known locations for the species be within wilderness where no motorized use is allowed.

Species Excluded From Further Analysis

Motorized uses on the Gila National Forest will have no impact on the following species because they are not known to occur within the Gila National Forest. These species were excluded from further analysis: Green milkweed, Metcalfe's tick-trefoil, Arizona coralroot, and Maguire's beardtongue.

Greene Milkweed (*Asclepias uncialis uncialis*)

Biological Requirements: The milkweed is primarily associated with species typical of short grass prairie ranging from 3,920-7,640 feet. Associated vegetation is comprised mostly of grasses (grama), with forbs, and shrubs; with trees (juniper) typically comprising less than 15% of the total vegetation cover (NatureServe 2009; Decker 2006). Plants are found on plains, open hills, or low slopes. Typically they are found growing in open spaces (base soil) between bunch grasses. Species is not restricted to a particular soil type but are most often found in sandy loam and dry warm soils (NatureServe 2009; Decker 2006).

Trend and Potential Occurrence: There are several small populations of this species throughout its range in CO, AZ, and NM (NatureServe 2009). In 1992 Greene milkweed was documented in two locations north of Silver City, NM. These locations were on private yucca grasslands with scattered Juniper trees (Decker 2006). The global status of this species is vulnerable (G3) (NatureServe 2009).

Metcalfe's Tick-Trefoil (*Desmodium metcalfei*)

Biological Requirements: Metcalfe's Tick-Trefoil grows on rocky slopes, in canyons, and in ditches within oak/piñon-juniper woodlands/grasslands at elevations ranging from 4,000-6,500 feet (NMRPTC 2009).

Trend and Potential Occurrence: *Desmodium metcalfei* has a global rank of G3; vulnerable (NatureServe 2009). It is a Species of Concern for both the USFWS and the State of New Mexico. It is also listed as a R3 sensitive species by the USFS. Specific location distribution information for this species is not available. Records show it is known from Grant and Sierra counties (Caballo watershed) in New Mexico and Cochise, Gila, Pinal, and Santa Cruz counties of Arizona (NMRPTC 1999). It is also found in adjacent Sinaloa County in Mexico (Natureserve 2009; NMRPTC 1999).

Arizona Coralroot (*Hexalectris spicata* var. *arizonica*)

Biological Requirements: Typically this species grows in heavy leaf litter under the drip line of the oaks, pines, and Junipers at elevations ranging from 3,480 to 6,950 feet (NMRPTC 1999). They are adaptable to a wide range of lighting conditions but are usually not out in the open. They are also found in canyon bottoms and wooded canyon sides most commonly over limestone (NMRPTC 1999).

Trend and Potential Occurrence: Arizona coralroot is listed as *endangered* by the state of New Mexico and as a *Species of Concern* by the USFWS. It is a sensitive species on the Gila National Forest of NM, but its global rank is G5 (secure) (NatureServe 2009). New Mexico counties with records of this species include Doña Ana, Hidalgo, Otero, and Sierra (NMRPTC 1999). It is also found in AZ and TX. It is also found in Coahuila, Mexico (NMRPTC 1999).

Maguire's Beardtongue (*Penstemon linarioides* ssp. *maguirei*)

Biological Requirements: Limestone cliffs and rocky hillsides in piñon-juniper woodlands seem to be the important habitat characteristics (AZGFD 2004). The AZGFD (2004) records document that this species occurs at elevations ranging from 6,000 – 6,500 feet, associated with Great Basin Conifer Woodland communities. The plant species it is associated with include: *Agave parryi* (Parry's agave), *Brickellia venosa* (veined brickell-bush), *Carphochaete bigelovii* (Bigelow's bristle-head), *Cercocarpus montanus* (Colorado birch-leaved mountain mahogany), *Dasylyrion wheeleri* (spoonflower), *Ericameria laricifolia*

turpentine-bush), *Eriodictyon angustifolium* (narrowleaf yerba santa), *Eriogonum wrightii* (Wright’s wild buckwheat), *Erysimum capitatum* (western wallflower), *Gutierrezia sarothrae* (broom snakeweed), *Muhlenbergia emersleyi* (bullgrass), *Nolina microcarpa* (sacahuista bear-grass), *Pinus cembroides* (Mexican pinyon), *Pinus edulis* (two-needle piñon pine), *Pinus monophylla* (single-leaf pine), and *Quercus turbinella* (shrub live oak) (AZGFD, 2004).

The AZGFD (2004) records also indicate that the most recent records document this species on south-facing slopes and mineral rich soils. Areas with these habitat characteristics in the Gila River Valley in Grant County, New Mexico and Greenlee County, AZ may contain habitat.

Trend and Potential Occurrence: This plant has not been seen in New Mexico in over 100 years (AZGFD, 2004). This taxon has only been collected five times, first in Grant County, NM and the more recent four collections come from Greenlee County, AZ (AZGFD, 2004). In both states the occurrence records are in or near the Gila River Valley (NM Rare Plants, 1999). The limited habitat information on this species indicates that, on the Forest, Maguire’s beardtongue has the potential to occur in areas with limestone cliffs in piñon-juniper woodlands.

Summary

Table 16 provides the effects determination for each sensitive plant species listed as potentially occurring on the Southwestern Regional Foresters Sensitive Plant Species List. Eight species will not be impacted by any of the alternatives because known occurrences are either completely within wilderness areas or there are no known occurrences within the Gila National Forest boundary.

Table 16. Sensitive plant effects determinations by alternative

Common Name	Scientific Name	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F	Alt. G
Heartleaf groundsel	<i>Packera cardamine</i> <i>Scenecio cardamine</i>	MINL	MINL	NI	NI	MINL	NI
Blummer’s dock	<i>Rumex orthoneurus</i>	MIL	MIL	MINL	MINL	MIL	MINL
Davidson’s cliff carrot	<i>Pteryxia davidsonii</i>	MIL	MIL	NI	NI	MIL	NI
Gila thistle	<i>Cirsium gilense</i>	MIL	MINL	NI	NI	MINL	NI
Goodding’s onion	<i>Allium gooddingii</i>	MINL	MINL	MINL	MINL	MINL	MINL
Villous groundcover milkvetch	<i>Astragalus humistratus</i> var. <i>crispulus</i>	MINL	NI	NI	NI	NI	NI
Metcalfe’s penstemon	<i>Penstemon metcalfei</i>	MINL	MINL	NI	NI	NI	NI
Rusby hawkweed	<i>Hieracium abscissum</i>	MINL	MINL	MINL	MINL	MINL	MINL
Mimbres figwort	<i>Scrophularia macrantha</i>	MINL	MINL	MINL	MINL	MINL	MINL
Pinos Altos flame flower	<i>Pheranthus humile</i>	MINL	MINL	MINL	MINL	MINL	MINL
Porsild’s starwort	<i>Stellaria porsildii</i>	MINL	MINL	MINL	MINL	MINL	MINL
Mogollon clover	<i>Trifolium longipes</i> spp. <i>neurophyllum</i>	MINL	MINL	MINL	MINL	MINL	MINL
Wooton’s hawthorn	<i>Crataegus wootoniana</i>	MINL	MINL	MINL	MINL	MINL	MINL
Wright’s dogweed	<i>Adenophyllum wrightii</i> var. <i>wrightii</i>	MINL	MINL	MINL	NI	MINL	MINL
Mogollon death camas	<i>Anticlea mogollonensis</i>	NI	NI	NI	NI	NI	NI
Yellow lady’s slipper	<i>Cypripedium parviflorum</i> <i>pubescens</i>	NI	NI	NI	NI	NI	NI
Hess’ fleabane	<i>Erigeron hessii</i>	NI	NI	NI	NI	NI	NI
Mogollon hawkweed	<i>Hieracium fendleri</i>	NI	NI	NI	NI	NI	NI

Common Name	Scientific Name	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F	Alt. G
	<i>var. mogollense</i>						
Greene milkweed	<i>Asclepias uncialis uncialis</i>	NI	NI	NI	NI	NI	NI
Metcalf's tick – trefoil	<i>Desmodium metcalfei</i>	NI	NI	NI	NI	NI	NI
Arizona coralroot	<i>Hexalectris spicata</i> var. <i>arizonica</i>	NI	NI	NI	NI	NI	NI
Maguire's beardtongue	<i>Penstemon linarioides</i> ssp. <i>maguirei</i>	NI	NI	NI	NI	NI	NI

NI= No Impact

MINL= May impact individuals, but not likely to result in loss of species viability or create trend toward Federal listing

Cumulative Effects

Cumulative effects are the incremental environmental impacts or effects of the action together with impacts of past, present and reasonably foreseeable future actions. The geographic scope for the cumulative effects assessment for sensitive plants includes the entire Gila National Forest. All action alternatives except alternative B reduce the miles available for motorized use, motorized dispersed camping, motorized big game retrieval, and motorized route off road parking.

Reasonable foreseeable actions that contribute to increased cumulative effects to sensitive plants within the Gila National Forest include: firewood gathering, livestock grazing, road maintenance, OHV use, hunting/camping, mining, and many other recreational uses. OHV use associated with cross country travel poses the biggest threat to sensitive plants. With the elimination of cross-country travel through all alternatives, these effects would be eliminated. Alternative E within the proposed motorized big game retrieval motorized dispersed camping and motorized route off road parking allows for the greatest benefit for sensitive plants. Alternatives D and G also decrease acreage available for motorized dispersed camping and motorized big game retrieval. Alternative F allows for a greater amount of motorized big game retrieval. Overall, the cumulative impacts to sensitive plants would be minimal with the action alternatives listed.

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