

**Biological Evaluation
of Sensitive Plant Species
and Evaluation of Management Indicator Plant Species**

for

The Fishlake OHV Route Designation Project

Fishlake National Forest

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Introduction

The purpose of this biological evaluation is to analyze and evaluate the potential effects of proposed alternatives on sensitive plant species that may occur within the proposed Fishlake OHV Route Designation project area.

Proposed Action

Full descriptions of the proposed actions are contained in Chapter 2 of the Fishlake OHV Route Designation Project Final Environmental Impact Statement. Tables 2-30 thru 2-36 contain a summary of the proposed alternatives. Alternative 1 is the No Action alternative, which would maintain the use and management associated with the existing motorized travel plan. Alternative 2 is the proposed action that was presented to the public on June 7, 2004 with the release of the Notice of Intent and was the first alternative to address the Purpose of and Need for Action. Alternative 3 is the modified proposed action which incorporates comments and concerns from public scoping and additional inventory and review from the 2004 field season. Alternative 4 provides additional protection of roadless areas and more emphasis on non-motorized recreation opportunities.

Final Preferred Alternative

Alternative 5 is the final preferred alternative and blends elements of the first three action alternatives. This alternative resembles Alternative 3 more than Alternatives 2 and 4. Additional route surveys were conducted in 2005 and 2006. Alternative 5 incorporates this recent route information and corrects numerous errors that were in the other three action alternatives. Actually, as a result of these more recent surveys, several adjustments and corrections were made to Alternatives 1, 2, 3 and 4 as well.

It is important to understand that no new routes will be constructed as part of the Fishlake OHV Route Designation Project. Only existing routes are being designated as open or closed to motorized use. The impacts associated with existing routes and their use and from motorized cross-country travel are already occurring. The route designation project offers the prospect of reducing existing resource damage while preventing the potential for future impacts. The proposed actions are comprised of changes to type or season of motorized use, route classification changes, and changes to travel plan definitions and exemptions.

Biological Evaluation

In conjunction with the proposed project, an evaluation of possible impacts to sensitive plant species was conducted. The findings are presented in this document.

Table 1 displays the 15 sensitive species on the Regional Forester's Sensitive Species List for the Fishlake National Forest that do not have other federal status. A brief habitat description accompanies each species in order to show possible areas of concern with respect to the proposed action. (Madsen 2003; Welsh *et al.* 2003; Rodriguez 2006)

Table 1. Status, Brief Habitat Description and Determination.

Common/Scientific Name	Status	Brief Habitat Description (Rationale for Determination)	Determination
Barneby woody aster <i>Aster kingii</i> var. <i>barnebyana</i>	Sensitive	Mountain mahogany and oak communities on rock outcrops	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Bicknell milkvetch <i>Astragalus consobrinus</i>	Sensitive	Volcanic gravel to barren stony hillsides in Emery, Sevier and Garfield counties	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Tushar Mountain paintbrush <i>Castilleja parvula</i> var. <i>parvula</i>	Sensitive	Alpine Meadows and igneous rockbeds at 10,000 to 12,000 feet; endemic to the Tushar Mountains, Beaver and Piute counties	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Pinnate spring-parsley <i>Cymopterus beckii</i>	Sensitive	Cliff crevices or sandy canyon bottoms of Navajo Sandstone at 5,500 to 8600 feet; endemic to San Juan and Wayne counties	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Creeping draba <i>Draba sobolifera</i>	Sensitive	Igneous gravels at 10,000 to 12,000 feet; endemic to the Tushar Mountains, Beaver and Piute counties	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Nevada willowherb <i>Epilobium nevadense</i>	Sensitive	Limestone outcrops in pinyon/juniper and mountain brush communities in the Canyon Mountains	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Elsinore buckwheat <i>Eriogonum batemanii</i> var. <i>ostlundii</i>	Sensitive	Igneous outcrops and gravels in shadscale, sagebrush, ponderosa pine, mixed desert shrub, and pinyon/juniper communities	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Rabbit Valley gilia (Wonderland aliceflower) <i>Gilia caespitosa</i> (<i>Alicellia caespitosa</i>)	Sensitive	Cliffs, ledges and exposed outcrops on Navajo and Wingate Sandstone	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing

Common/Scientific Name	Status	Brief Habitat Description (Rationale for Determination)	Determination
Fish Lake naiad <i>Najas caespitosa</i>	Sensitive	Shallow water off Pelican Point Fish Lake, Utah. Last recorded in the field in 1940 and may be extirpated. (Lack of any habitat affected by OHV motorized routes)	No Impact
Little penstemon (Aquarius penstemon) <i>Penstemon parvus</i>	Sensitive	Sagebrush/grass and pinyon/juniper communities on tertiary volcanic gravels between 8,200 and 11,500 feet	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Ward beardtongue <i>Penstemon wardii</i>	Sensitive	Desert shrub, pinyon/juniper, sagebrush, shadscale, and greasewood communities between 5,200 to 8,000 feet	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Arizona willow <i>Salix arizonica</i>	Sensitive	Wet meadows and streamside communities above 8,300 feet	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Beaver Mountain groundsel <i>Senecio castoreus</i>	Sensitive	Endemic to the Tushar Mountains on windswept ridges downward to spruce/fir communities in Piute County	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Bicknell thelesperma <i>Thelesperma subnudum</i> var. <i>alpinum</i>	Sensitive	Navajo sandstone and Carmel limestone between 7,300 and 9,000 feet	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing
Sevier townsendia <i>Townsendia jonesii</i> var. <i>lutea</i>	Sensitive	Salt desert shrub and juniper communities 5,500 to 6,000 feet	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing

Fishlake naiad is the one species shown in Table 1 that does not have habitat in the project area that may be impacted by OHV motorized routes.

The following 15 species descriptions are **quoted directly** from Rodriguez (2006) and are listed in the same order as they appear in Table 1 which is alphabetical by scientific name. The literature cited for this lengthy quotation is found in Rodriguez (2006).

Barneby Woody Aster (*Aster kingii* var. *barnebyana*)

Barneby woody aster is a member of the sunflower family (Asteraceae) and it grows from a well-developed taproot. There are persistent blackish or dark brown old leaf bases at the base of the plant. The stems are short (3-12 cm long) and the herbage is covered with glandular hairs. The leaves are basal, 0.8-12 cm long, and oblanceolate to spatulate in shape (Welsh et al. 2003) with 1-10 pronounced teeth (Atwood et al. 1991). Flowers occur in clusters of 1-5, standing 8-11 mm high. The inner bracts are often purplish and at least the outer tips are bent backward. The ray flowers are white, often fading to pale pink (Welsh et al. 2003). This plant flowers between August and September (Atwood et al. 1991).

This species is found in mountain mahogany and oak communities on rock outcrops composed of Precambrian quartzite (Franklin 1990, Atwood et al. 1991). These scattered occurrences indicate a total population of 600+ plants. The range of elevation is between 6,000 and 10,000 feet (Welsh et al. 2003). Major associated species are mountain spray (*Holodiscus dumosus*), red alumroot (*Huechera rubescens*), mountain snowberry (*Symphoricarpos oreophilus*), and shortstem buckwheat (*Eriogonum brevicaulle*) (Franklin 1990).

Barneby woody aster is present within 15-quarter sections, all on the Fillmore Ranger District of the Fishlake National Forest (Madsen 2002). Plants are harbored from threats such as livestock grazing by their occurrence on steep rock outcrops.

Bicknell Milkvetch (*Astragalus consobrinus*)

Bicknell milkvetch is a member of the pea family (Fabaceae). *A. consobrinus* is an acaulescent perennial, growing 1-5 cm tall, essentially lacking stems. The leaves with 3-11 leaflets are densely hairy on both sides. Flowers occur 2-10 per stem. The sepals are whitish, sometimes faintly purple tinged. The pods are 11-19 mm long, ovoid, and unilocular (Welsh et al. 2003). This species is found only on volcanic gravel, gravelly or sandy knolls, and barren stony hillsides (Atwood et al. 1991). It appears in pinyon-juniper and sagebrush communities between 6,000 and 8,500 feet (Welsh et al. 2003). Flowering occurs from mid-May to mid-July with hairy pods produced later (Atwood et al. 1991).

Bicknell milkvetch occurs in Sevier, Wayne, Piute, Garfield, and Emery Counties (Welsh et al. 2003). To date, there are 23-quarter sections known to have Bicknell Milkvetch within their boundaries. These all occur on the Loa Ranger District (Madsen 2002).

Tushar Paintbrush (*Castilleja parvula* var. *parvula*)

Tushar paintbrush is a member of the Figwort family (Scrophulariaceae). Its many stems reach between 9 and 21 cm in height with the old stems persisting and supporting entire lanceolate leaves. The inflorescence is dense and crimson or magenta colored, with a 1-2 cm calyx with unequal lobes (Welsh et al. 2003). The flowers appear from June to July, and the capsules break open to allow dispersion of seeds by wind or gravity (Spahr et al. 1991).

This taxa is distributed almost exclusively through the alpine meadows and igneous rockbeds of the Tushar Mountains between 10,000 and 12,000 feet (Spahr et al. 1991). This location is under the jurisdiction of the Beaver Ranger District of the Fishlake National Forest. Within Forest boundaries, it occurs in Beaver and Piute Counties (Madsen 2002). This species is one of several

Castilleja species that occupy narrow ecological and edaphic sites. Mining claims and mineral exploration have impacted habitat of this plant. Grazing may also affect this species (Spahr et al. 1991). Evidence of grazing had been observed during surveys (Clark 2002).

Castilleja parvula var. *parvula* occurs on the Beaver Ranger District of the Fishlake National Forest, currently known in 45-quarter sections (Madsen 2002). The species has been found to be very locally common, although it is very geographically restricted.

Pinnate Spring-parsley (*Cymopterus beckii*)

Pinnate spring-parsley is a member of the Parsley family (Apiaceae) that grows up to 40 cm tall. The leaves extend up the stem from a taproot, which is often clothed at the base with persistent leaf bases. The leaves are once or twice pinnate, with 2-3 opposite pairs of lateral leaflets. The leaflets are 0.5-4 cm long, or the terminal one may be up to 5.5 cm long. There are 1-3 flower clusters per stem. The bractlets are greenish with narrow margins. The petals are bright yellow when fresh, fading to white when dried (Welsh et al. 2003). Pinnate spring-parsley flowers from late May into July (Spahr et al. 1991). *C. beckii* can be distinguished from the closely related *C. lemmoni* by *C. beckii*'s entire leaflets, glabrous peduncles and rays, and slightly longer fruit (Welsh et al. 2003).

Pinnate spring-parsley occurs in pinyon-juniper, mountain brush, and ponderosa pine communities in sandy or stony places between 5,500 and 8,600 feet. This plant is endemic to Wayne and San Juan counties (Welsh et al. 2003).

Possible impacts to this species may come from road construction, mining, and/or oil and gas exploration. This plant grows mostly on sites inaccessible to large grazing animals (Spahr et al. 1991).

Pinnate spring-parsley is found in cliff crevices or sandy canyon bottoms of Navajo Sandstone and Cutler formations. Common associate plants species include little-leaf mountain mahogany (*Cercocarpus intricatus*), pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), and virgin-bower (*Clematis ligusticifolia*). At the lower elevation, pinnate spring-parsley is restricted to north-facing, shady slot canyons in Navajo Sandstone. Pinnate spring-parsley is found in less protected areas such as cracks and crevices of sandstone domes at higher elevations (Clark 2002).

Currently there are 10 known locations of *C. beckii* on the Loa Ranger District of the Fishlake National Forest, containing approximately 2,760 – 27,100 individuals (Clark 2002).

Creeping Draba (*Draba sobolifera*)

A member of the Mustard family (Brassicaceae), creeping draba has a branched caudex and tall, slender flower stalks with some or no leaves. The obovate leaves are up to 2 cm long and covered with star-shaped hairs. Flowering in July and August (Spahr et al. 1991), each stalk sports 5-20 yellow flowers measuring 4-5 mm in length. The fruit is a silicle up to 8 mm long with 4-12 seeds (Welsh et al. 2003).

The creeping draba grows mostly on igneous gravels of the Tushar Mountains (Spahr et al. 1991) as a member of alpine tundra or spruce-fir communities between 10,000 and 12,100 feet (Welsh et al. 2003).

Activities associated with mineral exploration and extractions have impacted the species (Spahr et al. 1991). This species is not affected by grazing as it occurs in igneous soils and on talus slopes where livestock grazing does not occur.

Creeping draba is known from 24-quarter sections on the Beaver Ranger District of the Fishlake National Forest (Madsen 2002). It is also reported to be on the Markaguant Plateau, Dixie National Forest. Further efforts to pinpoint a known location for the Dixie National Forest are necessary.

Nevada Willowherb (*Epilobium nevadense*)

Nevada willowherb is a member of the evening primrose family (Onagraceae). Nevada willowherb is shrubby with persistent, woody branches and a stout taproot. The stems are more or less upright, leafy, and 15-40 cm tall. The leaves are narrow, mostly alternate, 4-20 mm long, and folded. There are few to several flowers in a terminal cluster. The hypanthium is 2.0-4.5 mm long. The sepals are 2-4 mm long and purplish, with united 4-lobed pink and purple petals (Welsh et al. 2003). This species flowers from late June through September (Atwood et al. 1991).

Preferred habitat for this species includes pinyon-juniper and mountain brush communities on limestone cliffs and gravels at the base of cliffs (Spahr et al. 1991) at elevations between 5,100 and 8,800 feet in Iron, Millard, and Washington Counties in Utah (Welsh et al. 2003). Common associates of the Fishlake National Forest populations include mountain spray (*Holodiscus dumosus*), Gambel's oak (*Quercus gambelii*), hairy goldenaster (*Heterotheca villosa*), bluebunch wheatgrass (*Elymus spicatus*), Watson's goldenbush (*Haplopappus watsoni*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*), alder-leaf mountain mahogany (*C. montanus*), big or common sagebrush (*Artemisia tridentata*), pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), and shortstem buckwheat (*Eriogonum brevicaule*) (Franklin 1990).

Little is known about this species. Livestock and wildlife grazing and off-road vehicle use could threaten populations. Few roads exist in areas where this species is found. Populations often occur on Precambrian quartzite parent material (Franklin 1990).

Presently there are 10-quarter sections known to have occurrences of Nevada willowherb on the Fillmore Ranger District of the Fishlake National Forest (Madsen 2002). Previous records indicated a total population size of 425+ plants for the Fishlake National Forest. While concentrated in the Canyon Mountains on the Fishlake National Forest, this Utah/Nevada endemic has a fairly large overall distribution (Franklin 1990).

Elsinore Buckwheat (*Eriogonum batemanii* var. *ostlundii*)

Elsinore buckwheat is a member of the buckwheat family (Polygonaceae) that grows 10-45 cm tall. The stems are glabrous and erect with five branched flowering stalks. The leaves are basal, elliptic to spatulate, 1-3 cm long, and white tomentose underneath. The flowers are 1.5-2.8 mm long and white in coloration. Fruit consists of several pale brown achenes that are 2.5-3.0 mm long (Welsh et al. 2003). This species flowers between June and September (Atwood et al. 1991).

Elsinore buckwheat prefers igneous outcrops and gravels in shadscale, ponderosa pine, mixed desert shrub, and juniper communities between 5,500 and 6,500 feet. This sensitive plant is endemic to Piute and Sevier Counties in central Utah (Welsh et al. 2003).

Presently, there are 5 quarter sections with known occurrences on the Richfield Ranger District, 7 quarter sections with known occurrences on the Fillmore Ranger District, and 3 quarter sections with known occurrences on the Beaver Ranger District of the Fishlake National Forest. Thirteen known occurrences exist on private, State, and BLM administered lands within one mile of the Fishlake National Forest boundary (Madsen 2002).

Rabbit Valley gilia (*Gilia caespitosa*) or Wonderland Alice-flower (*Alicellia caespitosa*)

A. caespitosa, a member of the Phlox family (Polemoniaceae), grows in clumps from a taproot and branching caudex. It is clothed with persistent leaf bases and is terminated in rosettes of leaves. Herbage is glandular, often with adherent sand grains. The basal leaves are oblanceolate to linear and 3-20 mm long. Flowering stems (3-8 cm tall) are solitary or few to several per stalk. The petals are scarlet, fading maroon, or blue-purple with a 9-17 mm long tube (Welsh et al. 2003). Flowering occurs from June through July, with seed setting from late July into the end of August (Spahr et al. 1991).

A. caespitosa is associated with cliffs, ledges, and exposed outcrops, representing eroded or detrital Navajo and Wingate sandstones. Plants occur in full sun or in shady canyons, on exposed sandstones, cliff walls, and less commonly, sandy wash bottoms, all between 5,100 and 9,000 feet. This flower occurs in association with open pinyon-juniper woodlands, which are often mixed with some elements of mountain brush, sagebrush steppe, or ponderosa pine forests. It is restricted to scattered occurrences, from the northern Waterpocket Fold to Thousand Lakes Mountain and Rabbit Valley in Wayne County. This species is a very narrow endemic, known only from unstable and faulting soils (USDA et al. 1996).

Threats to this species include off-road use, recreational use, road and trail building/maintenance, mining, pesticide use, and collection. *A. caespitosa* is not affected by grazing as it occurs on steep slopes where cattle grazing does not occur (USDA et al. 1996).

A. caespitosa is currently a candidate species for federal listing under the Endangered Species Act (69 FR 24900). A Conservation Agreement and Strategy for this species was written by the BLM, USFS, FWS, and National Park Service (USDA et al. 1996). Protection measures described in the Agreement were designed to achieve long-term conservation of the species so that formal listing would not be warranted.

Wonderland Alice-flower is only known to occur in 2 locations on the Loa Ranger District of the Fishlake National Forest (Clark 2002). Recent changes in plant nomenclature have suggested that the plant be named *Aliciella caespitosa* instead of the previous *Gilia caespitosa* (Rabbit Valley gilia).

[Inserted Note that is not in Rodriguez (2006): This species is listed as Wonderland Alice-flower in the life histories report, but still goes by Rabbit Valley gilia on the Regional Forester's Sensitive Species List. Also, this species was removed from the Candidate List by the Fish and Wildlife Service (Federal Register 71 pp. 53756, 53767-68, September 12, 2006).]

Fishlake Naiad (*Najas caespitosa*)

The Fishlake naiad is a member of the naiad or water-nymph family (Najadaceae). This species is a submerged aquatic plant. The stems are stout, densely branching, and 2-4 cm long. Leaves are narrow and linear, about 3-12 mm long. Male florets are 2.0-2.5 mm long with a single, one-celled anther, while female florets are 2.0-2.5 mm long with three stigmas. The fruit is 2-2.5 mm long, with one shiny seed (Welsh et al. 2003). This species flowers and fruits in July and August (Atwood et al. 1991).

This naiad prefers habitats in shallow water of 12 inches or less with sand or gravel bottoms at 8,600 feet. In addition, this species is endemic to Pelican Point, Fishlake, in Sevier County (Spahr et al. 1991, Welsh et al. 2003).

The only known population of this species is located on the Loa Ranger District of the Fishlake National Forest; however, presence of this species has not been verified since the type collection of August 3, 1940 (Madsen 2002).

Little Penstemon (*Penstemon parvus*)

A member of the Figwort family (Scrophulariaceae), little penstemon has several stems 7-20 cm tall, from a relatively long, slender root system. The leaves are 0.7-6 cm long, entire, and often folded. The cymes are one to two flowered. The petals are blue and up to 20 mm long (Welsh et al. 2003). Little penstemon flowers from late June to August (Spahr et al. 1991).

Little penstemon grows in sagebrush and grass-forb communities at elevations between 8,500 and 10,500 feet. It is endemic to Utah in Piute, Garfield, and Sevier counties and apparently endemic to the Aquarius Plateau (Welsh et al. 2003).

There were 10 known populations of this species on the Loa Ranger District of the Fishlake National Forest in 1988 (Tew 1988). There are 18 quarter sections known to have occurrences on the Loa Ranger District, and 1 suspected on the Richfield Ranger District, which has not yet been verified (Madsen 2002).

Reclamation projects, roads, and the effects of excessive grazing in the past currently threaten this species' survival. This plant has been affected by sheep grazing (Spahr et al. 1991).

Ward Beardtongue (*Penstemon wardii*)

Ward beardtongue is a member of the figwort family (Scrophulariaceae). *P. wardii* has stems that are 15-43 cm tall and covered with small, rough hairs and dust. The leaves are entire, both basal and cauline, and oblong-lanceolate. Basal leaves are 1.5-9 cm long. The cymes hold one to several flowers, which are 2-3 cm long and blue with purple-red guidelines (Welsh et al. 2003). Flowering for this species occurs from May through July (Atwood et al. 1991).

This species prefers habitats in the desert shrub, pinyon-juniper, sagebrush, shadscale, and greasewood communities on the Bald Knoll and Arapien Shale formations (Atwood et al. 1991) at elevations between 5,500 and 6,800 feet (Welsh et al. 2003).

Increased utilization of gypsum will tend to reduce the habitat availability and population size of this species. Gypsum mining has and may continue to pose the major threat to endemic plants on the Arapien Shale Formation (Spahr et al. 1991).

Ward beardtongue can be found in Sanpete, Sevier, and Millard Counties and presently is known to occur on all districts of the Fishlake National Forest in 30-quarter sections (Madsen 2002).

Arizona Willow (*Salix arizonica*)

A member of the Willow family (Salicaceae), Arizona willow is a shrub that grows from ½ inch to 10 feet tall that can be scraggly, rounded, prostrate, or thicket formed (Galeano-Popp 1988). Leaves are 0.4-1.8 inches long and 0.2-0.9 inches wide and are rounded or nearly heart-shaped at the base with fine-toothed margins (USFWS 1992). The previous season's stems are bright red, while the current year's stems are yellow-green, red-brown, or brownish (Atwood 1996). Male catkins are 1-3 cm long, and female catkins are 1-4 cm long, both with brown to black pubescent scales. This species is related to and can be confused with *Salix boothii* in morphology (Fletcher 1987).

According to Arizona documents, *S. arizonica* occurs at elevations above 8,500 feet in wet meadows and streamsides, on volcanic soils (Galeano-Popp 1988, Mead 1996). In Utah, Arizona willow has also been found as low as 8,300 feet on calcareous soils (Mead 1996). Most plants have been found adjacent to perennial water, and less commonly in meadows adjacent to forest edges or meadows with sparse stands of spruce. Species associated with the Arizona willow include Geyer willow, Utah serviceberry, Bebb willow, blue and Engelmann spruce, shrubby cinquefoil, monkeyflower, tufted hairgrass, and *Carex* species (Galeano-Popp 1988).

Until recently, Arizona willow was known only to exist in the White Mountains of Arizona on land managed by the Apache-Sitgreaves National Forest and the White Mountain Fort Apache Indian Reservation (Galeano-Popp 1988). In 1993, a specimen was discovered in the Forest Service national collection that had been collected in 1913 from the "Sevier Forest," (Mead 1996) now administered by the Powell Ranger District, Dixie National Forest. Since formal surveys were begun in July 1994, numerous verified populations of this species have been recorded in Utah. Confirmed sightings occur in Sevenmile Creek and UM Creek on the Fishlake National Forest, Sidney Valley, Rainbow Meadows, Navajo Lake, and the East Fork of the Sevier River, Teasdale Ranger District, and Cedar Breaks National Monument. In addition to the areas listed above, one population has been recorded on the Manti-LaSal National Forest.

In 1995, a Conservation Assessment, Strategy, and Agreement were signed by state and federal agencies to manage the species under a common agreement (USDA 1995). Since the development of this document, management strategies have been implemented range-wide, which has led to the species not needing federal status.

Recent surveys have indicated that the species has a wider distribution and greater abundance than previously thought. The main threat to this species is the degradation of its habitat by livestock/big game, off-road vehicle use, road and pond construction, and timber harvesting. Weakened plants become more prone to rust infection, with increased risks of mortality from other environmental factors (USFWS 1992).

Beaver Mountain Groundsel (*Senecio castoreus*)

This member of the sunflower family (Asteraceae) is a perennial herb between 7-16 cm tall, erect or ascending. The leaf blades are 1-1.5 cm long and 5-10 mm wide. Herbage is woolly-tomentose; basal leaves are petiolate and are usually the largest in size. The upper leaves are smaller and clasping. The inflorescence is subumbellately corymbose with 1-5 heads and with involucre and bracts. The outer bracts are short and rays are lacking. Fruit is a glabrous achene (Welsh et al. 2003). This species flowers between July and August (Madsen 2002).

Beaver Mountain groundsel is endemic to Piute and Beaver Counties. It is often found on windswept ridges or less commonly downward to the spruce-fir community ranging in elevation from 11,000 to 12,700 feet (Welsh et al. 2003).

This species is known from 7 occurrences, within 9-quarter sections on the Beaver Ranger District of the Fishlake National Forest (Clark 2002, Madsen 2002).

Maguire Campion (*Silene petersonii*)

Maguire campion, a member of the Pink family (Caryophyllaceae), grows from creeping, sub-rhizomatous root branches and tap roots. The stems are 3-5 cm tall, hairy, and more or less glandular. The leaves are mainly along the stem in 2-6 pairs, are 1-5 cm long, and hairy like the stems. The upper petal is bent backwards and the flower is nodding both in bud and when open. Calyx are bell-shaped, 13-19 mm long, 10-veined, and green or purple. Petals are 15-33 mm long and pink to purplish. Maguire campion is a perennial (Welsh et al. 2003) that flowers 5-10 days after snow leaves the site (Spahr et al. 1991). Seeds are brown and 2-2.5 mm wide (Welsh et al. 2003). Small birds, mammals, and wind will disperse the seeds. The creeping rhizomes and perennial taproots persist for several seasons (Spahr et al. 1991).

Maguire campion occurs between 7,000 and 11,300 feet on limestone soils, and preferred sites include ponderosa pine, aspen, and spruce-fir communities (Welsh et al. 2003).

Potential threats to Maguire campion include limestone and mineral exploitation, timber harvest, and off-road vehicle use. Livestock do not use this plant (Spahr et al. 1991).

There are presently no known populations of Maguire campion on the Fishlake National Forest. However, the species does occur in Sevier County on the adjacent Manti-LaSal National Forest (Madsen 2002).

Bicknell Thelesperma (*Thelesperma subnudum* var. *alpinum*)

Bicknell thelesperma is a perennial herb and member of the Sunflower family (Asteraceae). It grows from a taproot, or less commonly with a caudex and creeping rootstock. Stems are 2-7 cm tall. The leaves occur mainly at the base of the stem and are between 1.5 and 9.0 cm long. Flowering disks are bright yellow (Welsh et al. 2003). Plants flower in late June and into July (Atwood 1996).

A Wayne County endemic, Bicknell thelesperma is restricted to the Navajo and Entrada sandstones and Carmel limestone in pinyon-juniper, mountainbrush, and bristlecone pine communities between 6,900 and 9,000 feet (Welsh et al. 2003).

This plant is not affected by grazing, as it occurs on Navajo sandstone and Carmel limestone on barren slopes where livestock grazing does not occur.

There are presently 13 known locations, within 15-quarter sections on the Loa Ranger District of the Fishlake National Forest (Madsen 2002, Clark 2002).

Sevier *Townsendia* (*Townsendia jonesii* var. *lutea*)

A member of the sunflower family (Asteraceae), Sevier *Townsendia* has stems that are subcaulescent to acaulescent caespitose and rising about 2-4 cm. Leaves are 1-4 cm long and oblanceolate. Flowers are mostly solitary. There are 13-21 yellow ray flowers, and disk flowers are about 3 cm long and yellow. The achene is 3-6 cm long and pubescent (Welsh et al. 2003).

This species prefers habitats in the salt desert shrub and juniper communities from 5,500 to 6,300 feet (Welsh et al. 2003). It occurs in Arapien shale and clays in volcanic rubble, and flowers from May through June (Atwood et al. 1991).

Sevier *Townsendia* occurs in Juab, Sevier, Sanpete, and Piute Counties. There are presently 2 quarter sections with known occurrences on the Fillmore Ranger District, and 7 quarter sections with known occurrences on the Richfield Ranger District of the Fishlake National Forest (Madsen 2002).

[This is the end of the lengthy quote from the life histories document (Rodriguez 2006).]

Effects Analysis

The Regional Forester's Sensitive Plant List includes 18 species known to occur on the Fishlake National Forest. Three species are federally listed: one as endangered (San Rafael cactus) and two as threatened (Maguire daisy and Last Chance townsendia). These three listed species were analyzed in the biological assessment document that was prepared for this OHV route designation project. There are no plant species known to occur on the Fishlake NF that are proposed for federal listing or that are candidate species.

All of the known occurrences and known potential habitat for these three species are in the southeastern corner of the Forest. The area of potential habitat for these three species was analyzed in greater detail as described in the next section below.

Rare Plant Emphasis Study Area

Thousand Lake Mountain Subsection, Solomon Basin, and the east portion of Last Chance (north to I-70) are of special interest because of occurrences and habitat for the three federally listed plant species mentioned above. Five of the 15 Forest Service sensitive species are also known to occur in this rare plant emphasis study area: Bicknell milkvetch, Bicknell thelesperma, pinnate spring-parsley, Rabbit Valley gilia (or Wonderland alice-flower), and Ward beardtongue. Ward beardtongue is the only one of these five species that occurs on the forest outside of this rare plant emphasis study area. (Also, Ward beardtongue has the widest distribution of any sensitive

species on the forest and occurs on all four districts.) This study area for rare plant emphasis was surveyed and analyzed in greater detail than the forest as a whole.

The rare plant emphasis study area (see Figure 1) includes all of the lands administered by the Fishlake NF inside the following polygon. Begin at the extreme southeast corner of the Forest, near Torrey, and follow the forest boundary clockwise westerly to Bicknell and then northerly to Utah 72. Proceed northeast on highway 72 to Hogan Pass and then go due north to I-70. Follow I-70 east to the forest boundary; turn south and follow the boundary along the east side of the Forest back to the starting point. This study area has 122,447 acres (including inholdings) and encompasses all of the known potential and occupied habitat for all the federally listed plant species known to occur on the Fishlake NF. Figure 2 shows the route designations for Alternative 5 in the rare plant emphasis study area for those routes **without distance designation corridors** for dispersed camping and also indicates which routes are proposed to be obliterated.

Open Use Areas

Four other specific locations merit consideration. These are the proposed open use areas where OHV and ATV riders will have unrestricted use of the areas.

Richfield Open Use Areas: The Richfield area is actually comprised of three subunits. One subunit, about 90 acres northwest of the main Richfield water tank, is included only in Alternatives 2 and 3. The next subunit is small and on the north side of a parcel of non-forest land near the sawdust pit. The third unit is narrow, long and curved. It starts at the sawdust pit by the second unit and extends west to the summit with Flat Canyon and then proceeds south and southeast to where the mouth of Flat Canyon meets I-70. These three subunits have a combined area of about 780 acres. More than two person days were spent surveying these three subunits for possible occurrences of sensitive species. One individual of Ward beardtongue was observed in the southern subunit. Ward beardtongue is widely distributed on the forest, the only sensitive species to occur on all four ranger districts, and is locally distributed in a large population that extends well beyond the perimeter of this subunit. (These Richfield open use areas are more than 50 miles west of the range of any federally listed plant species that are known to occur on the forest.)

Velvet Ridge Open Use Area: This area is located three miles northwest of Torrey (see Figure 2) and is about 190 acres but varies in size by nearly four acres between Alternative 2 and Alternatives 3 and 5. This area occurs within the rare plant study area. At least nine person days were spent surveying this open use area and the surrounding vicinity because of this area's potential for rare plant habitat. Based on observations during the survey, the boundary of the open use area was adjusted to avoid potential rare plant habitat, and one route's distance designation for dispersed camping was removed.

Analysis Method

This analysis considered two major areas: 1) the entire Forest (total area within the forest boundary is 1,564,236 acres which includes inholdings), and 2) the rare plant emphasis study area (with 122,447 acres including inholdings).

I began with this basic assumption: rare plants do not grow on the tracks of the motorized trails nor are those tracks suitable habitat. Consider the premise that as long as the motorized vehicles stay on the existing tracks, rare plants and their habitats are not being affected.

There is a 300-ft wide exemption on both sides of the roads in Alternative 1 (existing condition) where open use with motorized vehicles is allowable. Excluding Alternative 1 there are only five situations where motorized vehicles might be authorized to leave the designated two tracks of a forest route. First, to ride anywhere one desires within the boundaries of the designated open use areas. Second, to leave a designated road or trail only on previously established tracks to travel directly to, and return directly from, a previously used dispersed camping site within the distance designation corridor. Third, to turn around or park safely along the side of a designated route in a manner that avoids wet meadows, stream corridors and undisturbed areas. Fourth, to drive in designated firewood areas. Designation of firewood areas is beyond the scope of the analysis. However, firewood gathering will be allowed only in officially designated areas and with the appropriate permit obtained from a Forest Service office. Fifth is administrative use (i.e., special use permits, contracts, some noxious weed treatments, military operations, fire fighting, and search and rescue).

Hence, the primary risk to rare plants and/or habitat is the potential for impact within the distance designation corridors for dispersed camping where approved along authorized routes. Certainly not all distance designation corridors will be suitable for dispersed camping use, and not all of the distance designations have potential habitat for rare plants. However, I chose to analyze the total number of acres of distance designation area because this is where the risks and potential threats to rare plants will most likely occur. I suggest that this approach is likely the most unbiased considering the lack of information available about the specific characteristics of each distance designation corridor. Looking at the relative proportions for all distance designation corridors is the most objective approach.

In the analysis of distance designation corridors along the routes, the following general rules of thumb provide estimates of the area for each mile of route. For a 150-ft distance designation on each side of the route, the area is about 36.5 acres per mile of route. For a 300-ft distance designation, the area is roughly 73 acres per mile of route.

Description of Analysis and Tables

This analysis compared the amount of area where unrestricted and open use was allowable for each of the five alternatives. Next, the areas from distance designations for roads and trails were evaluated and compared for each alternative. The proportions of total areas were also analyzed. This analysis was completed for the entire forest (see Table 2) and for the rare plant study area (see Table 3).

Table 2. Acres of unrestricted/open use, roads and trails, and percent of the total area by alternative for the entire Fishlake NF. (1,564,236 acres for this analysis includes inholdings.)

	Total Acres by Alternative for the Entire Forest Area				
Designation	Alternative 1 (Unrestricted, A Areas, and 300' Exemption on Roads)	Alternative 2 (Open Areas, 300' Distance Designation for Dispersed Camping along Roads and Motorized Trails)	Alternative 3 (Open Areas, 150' Distance Designation for Dispersed Camping along Roads and Motorized Trails)	Alternative 4 (150' Distance Designation for Dispersed Camping along Roads and Motorized Trails)	Alternative 5 (Open Areas, 150' Distance Designation for Dispersed Camping along Roads and Motorized Trails)
Unrestricted/ Open Use	909,115	973	969	0	879
Roads and Trails	25,318	160,532	83,910	64,838	84,295
Total	934,433	161,505	84,879	64,838	85,174
Percent of Total Area (1,564,236)	60%	10%	5%	4%	5%

Alternative 1 has unrestricted/open use and road exemption areas that include 60% (934,433/1,564,236 acres) of the area of the entire Fishlake NF. Alternative 2 has six times less potential risk to the total area than the current condition. Alternatives 3, 4 and 5 have 12, 15 and 12 times less area of potential impact, respectively, than the current condition. Also, under the action alternatives, these four percentages should decline over the next five years as dispersed camping distance designations are either dropped or replaced by designated routes.

Next, compare the total open use acres in Alternative 5 to the total of unrestricted acres in Alternative 1 (909,115 vs. 879 acres). There is a difference of **3 orders of magnitude; 1,034 times (or 103,400%) less** area that might be exposed to unrestricted/open use motorized activity.

Table 3. Acres of unrestricted/open use, roads and trails, and percent of the total area by alternative for the rare plant emphasis study area. (The 122,447 acres for this analysis includes inholdings.)

	Total Acres by Alternative for the Rare Plant Emphasis Study Area				
Designation	Alternative 1 (Unrestricted, A Areas, and 300' Exemption on Roads)	Alternative 2 (Open Areas, 300' Distance Designation for Dispersed Camping along Roads and Motorized Trails)	Alternative 3 (Open Areas, 150' Distance Designation for Dispersed Camping along Roads and Motorized Trails)	Alternative 4 (150' Distance Designation for Dispersed Camping along Roads and Motorized Trails)	Alternative 5 (Open Areas, 150' Distance Designation for Dispersed Camping along Roads and Motorized Trails)
Unrestricted/ Open Use	31,488	193	189	0	189
Road and Trails	4,478	9,499	5,223	4,189	5,082
Total	35,966	9,692	5,412	4,189	5,271
Percent of Total Area (122,447 ac.)	29%	8%	4%	3%	4%

Alternative 1 has unrestricted/open use and road exemption areas in nearly 30% (35,966/122,447 acres) of the total study area. (This is better from the start; Alternative 1 has just half of the relative potential impact compared to the percentage of the entire forest shown in the first table.) Alternative 2 has 3.7 times less area of risk to the rare plant emphasis study area than does Alternative 1. Alternatives 3, 4 and 5 have 7, 10, and 7 times less area of potential impact, respectively than does the current situation.

When comparing the total unrestricted/open use acres in Alternatives 2, 3 and 5 to the total of unrestricted/open use acres in Alternative 1 (31,488/193 or 189 acres), the analysis shows about **165 times (16,500%) less** area that might be exposed to unrestricted/open use motorized activity. This is a huge benefit for rare plant habitat (see Figure 2).

Effects Analysis for Alternative 1 (existing condition—no action)

Direct Effects and Indirect Effects

Motorized activity probably will increase and substantial disturbance to populations of rare plants will become increasingly more apparent. In one area, two-wheeled motorized trail bikes were traveling through a population of Wonderland aliceflower. However, this was in a “C Area” on the current travel map that was officially closed to all motorized travel. Allowable cross-country travel away from designated routes is occurring in occupied habitat for both creeping draba and Beaver Mountain groundsel at a rate that causes concern currently.

Cumulative Effects

The “no action” or “no change” alternative is the existing condition and would be the continuation of current management. With respect to rare plants and occupied habitat, the fabric of the landscape is just beginning to fray. Based on numerous field observations, I feel that none of the **populations** of the sensitive plant species have been affected or impacted substantially, yet. Nonetheless, individuals and occupied habitat for some of these species have begun to be disturbed by motorized vehicles in just the past few years. This is not surprising given the marked increase in OHV activity during this period. If the existing condition were to continue, clearly the frayed portions of these habitats would begin to unravel and some populations of rare species would be impacted substantially and thus, at risk. Implementation of the present and foreseeable projects listed in Appendix C, might increase the risk and accelerate the rate at which ecosystems that contain rare plant habitats would become disturbed and compromised.

Determinations

I estimated the number of years before substantial negative effects or impacts would occur to a population. These estimates are subjective. The estimates are also relative and might have been shown by an ordinal ranking; nevertheless, I chose to use a range of years. Table 4 shows all of the plant species on the Regional Forester’s Sensitive Species List, without other federal status, that are known to occur, or have potential habitat, on the Fishlake NF.

Table 4. Alternative 1: Years estimated before substantial negative effects or impacts from OHV activity occur to a population for the 15 plant species on the Regional Forester’s Sensitive Species List, without other federal status, that are known to occur on the Fishlake NF.

Common Name	Federal Status	Years Estimated <i>Before Substantial Negative Effects or Impacts from OHV Activity Occur to a Population</i>
Arizona willow	Sensitive	10 to 20
Barneby woody aster	Sensitive	10 to 20
Beaver Mountain groundsel	Sensitive	5 to 10
Bicknell milkvetch	Sensitive	10 to 20
Bicknell thelesperma	Sensitive	10 to 20
creeping draba	Sensitive	5 to 10
Elsinore buckwheat	Sensitive	10 to 20
Fish Lake naiad	Sensitive	no impact anticipated
little penstemon	Sensitive	10 to 20
Nevada willowherb	Sensitive	10 to 20
pinnate spring-parsley	Sensitive	10 to 20
Sevier townsendia	Sensitive	10 to 20
Tushar paintbrush	Sensitive	10 to 20
Ward beardtongue	Sensitive	10 to 20
Wonderland alice-flower or Rabbit Valley gilia	Sensitive	10 to 20

Effects Analysis of Alternatives 2, 3, 4 and 5

Direct Effects and Indirect Effects

Nearly 120 person days have been spent surveying in the rare plant emphasis study area in 2004, 2005, and 2006 (see Figure 1). The potential for suitable and occupied habitat of listed species was the major reason for this concentrated survey effort. However, the substantial number of routes without distance designation corridors in this rare plant emphasis study area provides much greater protection to the individuals and suitable habitats for the five sensitive species as well. Some routes through these areas have been changed to non-motorized; other routes will be obliterated. (Also forest-wide, the distance designation is removed from any route that is gated closed.) Within the rare plant emphasis study area for any of the four action alternatives, there is not any known occupied habitat in any distance designation corridor for either pinnate spring-parsley or Rabbit Valley gilia (also called Wonderland alice-flower). There is some occupied habitat within some of the distance designations for Bicknell milkvetch, Bicknell thelesperma, and Ward beardtongue. However, Bicknell milkvetch is the most abundant sensitive species in this emphasis area; Bicknell thelesperma is relatively abundant within portions of the emphasis area, and Ward beardtongue is widely distributed on the forest. In all cases for these three species, their populations within this rare plant emphasis study area extend well beyond any of the distance designation corridors and the viability of any single population will not be at risk with the implementation of Alternative 5 as modified.

Comparable field surveys specific to the OHV route project were not conducted on the forest for the area of the forest west of the rare plant emphasis area. The remaining sensitive species either have wider distributions, or if smaller distributions, then are not commonly found in the vicinity of motorize routes. The magnitudes of difference for the action alternatives displayed in Table 2 convey the tremendous benefits to the sensitive species on the forest. The integrity and quality

of ecosystems on more than 900,000 acres of land administered by the Fishlake National Forest will improve over time when Alternative 5, as modified, is implemented, and allowable open use and cross-country travel are reduced to less than 900 acres.

OHV traffic moving along the trails stirs up dust. Some of the dust may become deposited on individuals of the sensitive species. This is considered a low risk to the populations of these species overall.

There is the possibility of additional visitor foot traffic in some areas when riders might park along the route and walk to some vista or point of interest. This is considered to be a very low probability event.

Invasive Plant Species: The introduction of invasive species has the potential to increase and may be an indirect effect. The Fishlake National Forest has a current GIS layer of the known locations of noxious weeds. The actual area of infestation is less than 20,000 acres. Thus, nearly 99% of the acres managed by the forest are noxious-weed-free.

The Fishlake National Forest has an award winning noxious weed management program. Because of the relatively low number of acres infested with noxious weeds, public awareness, education, and an aggressive early detection/rapid response program are key forest objectives. The Fishlake NF conducted a successful weed bounties program in 2005. Participants were paid a monetary bounty for location information about previously unmapped areas of noxious weeds. The Forest is a signatory on four cooperative weed management areas (CWMAs). One CWMA project was recently funded and completed. The Weed Warrior Program to “Wash Before You Ride” was introduced in September 2006 at the Rocky Mountain ATV Jamboree. These are example of the types of educational and public outreach opportunities that are actively being promoted by the forest.

From the weed inventory, it is obvious that many of the noxious weed species spread along travel corridors. The strength of this OHV travel management plan is to reduce by more than 99.9% the number of acres currently available for cross-country travel. (The reduction in cross-country travel is from more than 900,000 acres to less than 900 acres.) Therefore, the potential spread of invasive species in these areas will be substantially reduced through this new access management plan. The likelihood of invasive species establishing and spreading into potential habitats of these sensitive plant species as a result of OHV traffic is considered to be low.

Cumulative Effects

Appendix C of this EIS contains a list of projects on the Fishlake National Forest for the present or foreseeable future. These other projects will require analysis and would not proceed if significant effects and/or incremental impacts were to occur to these rare plant species. Also, those future activities that occur off-route will not interact with unrestricted OHV cross-country travel. Therefore, the cumulative effects of this project with the other foreseeable projects will not cause significant adverse resource impacts to rare plant species or their habitats. The following paragraph is in the final EIS.

The Forest Supervisor may continue to issue travel management orders pursuant to part 261, subpart B, and impose temporary, emergency closures based on a determination of considerable adverse effects pursuant to §212.52(b)(2). This includes considerable adverse impacts to soil, vegetation, wildlife, wildlife habitat, cultural resources, Threatened or Endangered species, other

authorized uses, or other resources, until the effects are mitigated or eliminated and measures are implemented to prevent future recurrence. The proposed actions do not in any way limit this existing authority.

Determinations

I determine that implementing Alternative 5, as modified, in the Fishlake OHV Route Designation project will have “**no impact**” on the individuals or habitat of Fishlake naiad (*Najas caespitosa*). This is based on the fact that Fishlake naiad is known on the forest only from Fish Lake where it was found growing in shallow water to about 12 inches deep.

In contrast, I determine that implementing Alternative 5, as modified, in the Fishlake OHV Route Designation Project “**may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species**” for the following species: Barneby woody aster (*Aster kingii* var. *barnebyana*), Bicknell milkvetch (*Astragalus consobrinus*), Tushar Mountain paintbrush (*Castilleja parvula* var. *parvula*), pinnate spring-parsley (*Cymopterus beckii*), creeping draba (*Draba sobolifera*), Nevada willowherb (*Epilobium nevadense*), Elsinore buckwheat (*Eriogonum batemanii* var. *ostlundii*), Rabbit Valley gilia or Wonderland alice-flower (*Gilia caespitosa* or *Alicellia caespitosa*), little penstemon (*Penstemon parvus*), Ward beardtongue (*Penstemon wardii*), Arizona willow (*Salix arizonica*), Beaver Mountain groundsel (*Senecio castoreus*), Bicknell thelesperma (*Thelesperma subnudum* var. *alpinum*), and Sevier townsendia (*Townsendia jonesii* var. *lutea*). This determination is based on field surveys, life histories and habitat assessments for the sensitive plant species, or their habitat, known to occur on the Fishlake National Forest and as displayed in Table 1 with the accompanying biological evaluation. Although some impacts to individuals or habitat may occur with the project implementation, I determine that full implementation of Alternative 5 will provide an enormous benefit to these species over time as allowable cross-country travel on the forest is reduced from more than 900,000 acres to less than 900 acres and the type of allowable use is restricted within the distance designation corridors. Also, this benefit will increase and as distance designations continue to be removed from motorized routes over the next several years.

Evaluation of Management Indicator Plant Species (MIS)

The Forest Plan (1986) shows Rydberg’s milkvetch (*Astragalus perianus*) as a Management Indicator Species (MIS), the only plant MIS, because it was federally listed as threatened when the Forest Plan was signed. However, the Fish and Wildlife Service officially delisted Rydberg milkvetch in 1989 following extensive field surveys and interagency collaboration in the 1980’s. In April 1994 the species was dropped from the Regional Forester’s Sensitive Species List.

Habitat for this species is tertiary igneous gravels, often on barrens in alpine or montane sites in tundra and spruce-fir communities at 2135 to 3480 m (Welsh *et al.* 2003). Occupied habitat for this species occurs within the proposed action area for the Fishlake OHV Route Designation Project.

Rodriguez (2006) describes several monitoring surveys that were completed for Rydberg's milkvetch in 2002 and concludes with this statement. "There are 31 known locations on the Beaver, Loa, and Richfield Ranger Districts, which contain approximately 95,000+ individuals. Based on the data discussed above, Rydberg's milkvetch is stable and viable across the Forest."

I determined that none of the action alternatives (Alternatives 2, 3, 4 and 5) will substantially impact this MIS species. I determine that the implementation of Alternative 5, as modified, will not have adverse effects on the populations, or the viability as a species, of Rydberg's milkvetch.

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Figure 1. The rare plant emphasis study area has 122,447 acres including inholdings.

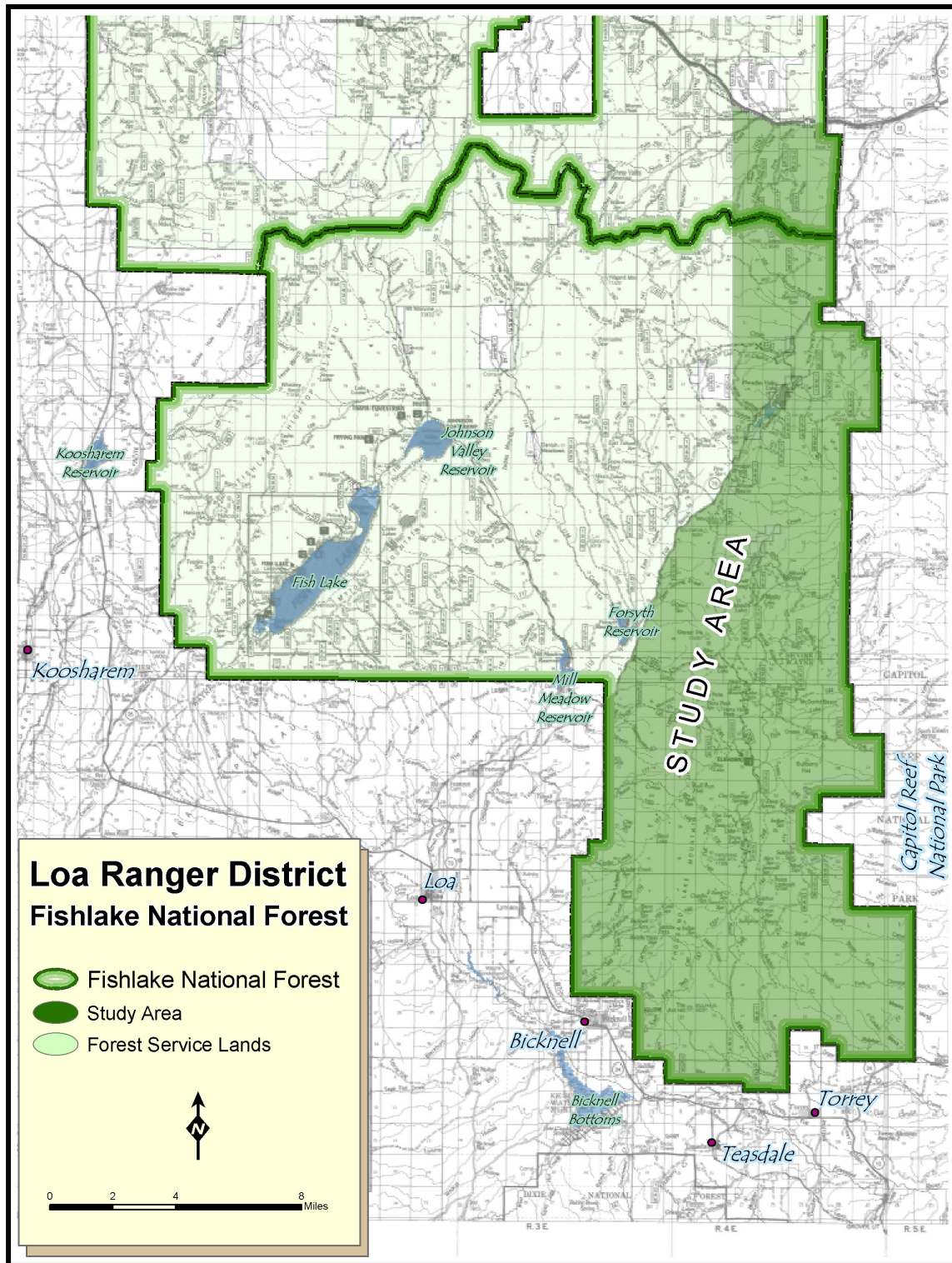


Figure 2. Alternative 5: Rare Plant Emphasis Study Area that shows routes without distance designation corridors for dispersed camping including obliterated routes.

