

Rare Plants Specialist Report

Motorized Travel Plan
Dixie National Forest

Prepared through a combined effort by
Lucretia Y. Smith, TEAMS Botanist
and
Brian Monroe, Dixie National Forest Rangeland Management Specialist

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I. Introduction

Plant species selected for this analysis are composed of species that are listed as Threatened, Endangered, or Proposed under the Endangered Species Act (USDI 2005) and Sensitive Species listed on the Intermountain Region Proposed, Endangered, Threatened, and Sensitive Species list (USDA 2003) (Table 1 beginning on page 6). *Townsendia aprica* (Last Chance townsendia) is the only threatened species located within the project area. This threatened species along with the 24 sensitive species with known populations within the project area will be analyzed in detail.

The project area is composed of all four ranger districts on the Dixie National Forest (Cedar City, Escalante, Pine Valley, and Powell) and the Teasdale portion of the Fremont River Ranger District, Fishlake National Forest. In 2005 the Teasdale Ranger District, Dixie National Forest, was combined with the Loa Ranger District, Fishlake National Forest, into the new Fremont River Ranger District, administered by the Fishlake National Forest. For clarity, this report refers to the Teasdale Ranger District when discussing that portion of the Fremont River Ranger District that is part of the project area.

II. Project Description

The action proposed by the Dixie National Forest to meet the purpose and need is to designate a motorized travel system that addresses the following four components:

1. Cross-country travel.
 - a. Prohibition of motorized cross-country travel (travel off designated roads or trails) except as specified for permitted uses (e.g., firewood gathering, allotment maintenance), emergency fire suppression, search and rescue activities, law enforcement activities, military operations, and Forest Service administrative uses and purposes.
2. Designation of authorized National Forest System roads and motorized trails.
 - a. Closure of currently authorized routes that will not be designated for motorized use and will therefore be removed from the National Forest System of roads and motorized trails. All routes removed from the system will be decommissioned.
 - b. Designation of unauthorized routes that will be added to the National Forest System of roads and motorized trails, thereby becoming authorized routes.
3. Designation of authorized uses of National Forest System roads and motorized trails.
 - a. Designation of routes that will be open to all uses.
 - b. Designation of routes needed to accommodate administrative activities and permitted uses.
 - c. Designation of routes needed for access to private lands, rights-of-way, easements, and other jurisdictions.
 - d. Designations of routes with seasonal restrictions or routes that only allow certain types of vehicles.
4. Construction or relocation of designated National Forest System roads and motorized trails.
 - a. Construction or relocation of routes to improve the transportation system or to meet evaluation findings specified through the environmental analysis.

As allowed by section 212.50 (b) of the Travel Rule, previous and pending decisions that allow, restrict, or prohibit motor vehicle use on National Forest System roads, trails, or areas have been incorporated into this travel management decision. The Proposed Action is not to revisit these decisions.

III. Existing Condition

Rare Plants

The Intermountain Region's Proposed, Endangered, Threatened, and Sensitive Species list includes species known to occur on the Dixie National Forest (USDA 2003). One species, federally-listed as Threatened, *Townsendia aprica* (Last Chance townsendia), is known to occur on the Forest. Twenty-four sensitive species are known to occur on the Forest. Four additional sensitive plants have potential habitat on the Forest and could possibly occur, but there are no known populations (Table 1 beginning on page 6). There are no Endangered species on the Forest (Rodriguez 2004).

Consultation History

Concurrence and Recovery Plans

The recovery plan for *Townsendia aprica* does not designate any critical habitat; however, threats to this species include road development and road building (USDI 1993). The recovery plan states:

At present, off-road vehicle use on *T. aprica* habitat is light. However, with possible human population increases in the region in which *T. aprica* occurs, and with increasing popularity and availability of improved off-road vehicles, off-road vehicle use is expected to increase. This can be expected to result in an increase in damage to the habitat of *T. aprica*. The Bureau of Land Management, Forest Service, and National Park Service should develop off-road vehicle use plans that prohibit off-road vehicle use on *T. aprica* habitat.

Nearly 120 person days have been spent surveying in the rare plant emphasis study area in 2004, 2005, and 2006. On the Teasdale portion of the Fremont River Ranger District, there are seven known locations where Last Chance townsendia plants are growing near established routes. Individual townsendia plants appear to be colonizing disturbed substrates at three of the seven sites.

Analysis

Assumptions

This analysis is done under the assumption that interest and use of the Dixie National Forest will increase with time. This assumption is based on the following information:

- Forty-nine percent of Clark County, Nevada (Las Vegas area) residents surveyed in a random telephone survey indicated that they had visited the Dixie National Forest in the preceding 12 months (A & A 1994).
 - Clark County remains one of the fastest-growing areas in the country with an estimated population of 1,710,551 in 2005 and a 24 percent rate of growth between 2000 and 2005 (U.S. Census Bureau 2007a).
 - The project area is understood to be a popular recreation area for many Clark County residents.
 - Clark County residents also own several properties in area subdivisions.
- The analysis area is located in Iron, Garfield, Washington, Kane, Wayne, and Piute counties. Much of the visitation to the Dixie National Forest is by residents from these counties.
 - The population of Iron County was estimated to be 40,696 in 2005 and it is projected to grow to a population of 55,456 by 2030.
 - Garfield County was estimated to be 4,869 in 2005 and it is projected to grow to a population of 6,841 by 2030.
 - Washington County was estimated to be 109,776 in 2005 and it is projected to grow to a population of 218,840 by 2030.
 - Kane County was estimated to be 6,907 in 2005 and it is projected to grow to a population of 13,628 by 2030.
 - Wayne County was estimated to be 2,819 in 2005 and it is projected to grow to a population of 4,987 by 2030.
 - Piute County was estimated to be 1,448 in 2005 and it is projected to grow to a population of 1,588 by 2030 (GOPB 2007).
- Rare plants have not been found to occupy road bed or cut or fill surfaces on existing roads on the Dixie National Forest. The exception would be *Townsendia aprica* that requires opening in overstory plants in some cases disturbance from motorized vehicles have provided these openings. It is determined that motorized vehicles are not required to provide these opening. In addition *T. aprica* is susceptible to prolonged repeated disturbance. The premise is that as long as motorized vehicles stay on the existing tracks, rare plants and their habitats are not being negatively affected.

The purpose of this analysis is to:

1. Determine if the alternatives would impact any of the Threatened or Sensitive plant species that have potential to occur in the analysis area, and, if so, list mitigation measures,
2. Determine if the alternatives would contribute to the loss of viability of any Threatened or Sensitive plant species or cause a trend toward federal listing of Sensitive species,
3. Determine compliance with the 1986 Land and Resource Management Plan for the Dixie National Forest (USDA 1986) concerning Threatened and Sensitive plant species, and
4. Determine compliance with the Endangered Species Act.

Sensitive Plants

This report takes into account the occupied habitat and known population areas of 24 Sensitive plants species and 1 Threatened species. Table 1 below describes the habitat for each of the Sensitive species. Table 2 on page 9 describes the habitat for the Threatened species.

Sensitive Plant Species Habitat

Rare plant occurrences are displayed by ranger district in the table below. These areas cover a broad range of terrestrial habitats, land cover types, physiographic features, and management emphasis both as individuals and as a group. While ranger districts are not meant as a way of representing a single common land character, they are a means of facilitating the planning process by dividing the Forest into subunits that can be used to focus the discussion of possible effects within a relatively small area. For the purposes of this report, rare plant populations or suitable habitat will be referred to in the context of ranger districts.

Table 1. Sensitive Plant Species That Occur or Have Suitable Habitat on the Dixie National Forest

Species (<i>Scientific name</i>)	Habitat Suitability Based On:	Further Analysis?*	Habitat currently in areas open to cross-country travel?	Presence & Location
Angell's cinquefoil (<i>Potentilla angelliae</i>)	Endemic in Wayne County on the Aquarius Plateau in rocky subalpine meadows at about 10,988 feet elevation.	No	No	Known on Teasdale
Aquarius paintbrush (<i>Castilleja aquariensis</i>)	Endemic to the Aquarius Plateau, Garfield and Wayne counties, in sagebrush and grass meadow communities adjacent to aspen-subalpine fir on clay-loam soils at about 9,800-11,000 feet elevation.	Yes	Yes	Known on Escalante and Teasdale
Arizona willow (<i>Salix arizonica</i>)	Found in riparian corridors above 8,500 feet elevation in unshaded or partially shaded wet meadows, streamsides.	Yes	Yes	Known on Cedar City, Powell, and Teasdale
Bicknell thelesperma (<i>Thelesperma subnuda</i> var. <i>alpina</i>)	Endemic to Wayne County; restricted to the Navajo Sandstone and Carmel Limestone on the peculiar vari-colored phase in pinyon-juniper, mountain brush, and bristlecone pine communities at 7,380-9,000 feet elevation.	Yes	Yes	Known on Teasdale
Cedar Breaks biscuitroot (<i>Cymopterus minimus</i>)	Bristlecone, ponderosa pine, and spruce-fir communities on escarpments on Wasatch Limestone at 8,000-10,400 feet elevation.	Yes	Yes	Known on Cedar City, Escalante, and Powell
Pinnate spring-parsley (<i>Cymopterus beckii</i>)	Pinyon-juniper, mountain brush, and ponderosa pine communities in sandy canyon bottoms or cliff crevices between 5,500 and 9,000 feet elevation	Yes	Yes	Teasdale Ranger District
Cliff jamesia (<i>Jamesa americana</i> var. <i>Zionis</i>)	Mountain brush and spruce-fir communities, mostly on cliffs and other rocky places at 4,000-10,500 feet elevation.	No	No known locations	Not known on the Dixie National Forest
Creeping draba (<i>Draba sobolifera</i>)	Endemic to the Tushar Mountains in alpine tundra and spruce-fir communities in igneous gravels and talus at 7,500-12,000 feet elevation.	No	No known locations	Not known on the Dixie National Forest
Dana milkvetch (<i>Astragalus henrimontanensis</i>)	Endemic to southcentral Utah in Garfield County in ponderosa pine, pinyon-juniper, and sagebrush communities on gravelly loam soil, 7,000-9,200 feet elevation.	No	No	Known on Escalante and Teasdale
Guard milkvetch (<i>Astragalus zionis</i> var. <i>vigulus</i>)	Endemic to the east side of the Pine Valley Mountains in pinyon-juniper, mountain mahogany, and oak-Garrya communities at 5,000-8,200 feet.	No	No	Known on Pine Valley

Species (Scientific name)	Habitat Suitability Based On:	Further Analysis?*	Habitat currently in areas open to cross-country travel?	Presence & Location
Jones goldenaster (<i>Heterotheca jonesii</i>)	Found in Garfield, Kane, and Washington counties on ponderosa pine, manzanita, pinyon-pine, and Douglas-fir communities on sandstone or in sand between 4,000 and 9,450 feet elevation.	Yes	Yes	Known on Escalante
Little penstemon (<i>Penstemon parvus</i>)	Endemic in Garfield, Piute, Sevier, and maybe Wayne counties in sagebrush-grass, and spruce communities between 8,200 and 10,170 feet elevation.	Yes	Yes	Known on Escalante and Teasdale
Maguire campion (<i>Silene petersonii</i>)	Ponderosa pine, Rocky Mountain juniper, bristlecone pine, and spruce-fir, on open calcareous escarpments between 6,955 and 11,200 feet elevation.	Yes	Yes	Known on Cedar City and Powell
Navajo Lake milkvetch (<i>Astragalus limnocharis</i> var. <i>limnocharis</i>)	Found in plant communities with scattered bristlecone pine on the Wasatch Limestone Formation between 8,800 and 10,500 feet elevation. Endemic to the Navajo Lake area on the Cedar City Ranger District.	No	No	Known on Cedar City
Neese's peppergrass (<i>Lepidium montanum</i> var. <i>neeseae</i>)	Endemic to southcentral Utah in Garfield County on dry, sandy sites with little cover in ponderosa pine, manzanita, and spruce-fir communities. Typically found on the pink and white limestone members of the Wasatch Formation and on the Navajo Sandstone Formation at elevations of 7,300-9,000 feet.	No	No	Known on Escalante
Paradox moonwort (<i>Botrychium paradoxum</i>)	Meadow habitats and snowfields, at elevation between 9,000 and 10,000 feet.	Yes	Yes	Known on Escalante
Paria breadroot (<i>Pediomelum pariense</i>)	Endemic in Garfield, Washington, and Kane counties on ponderosa pine and pinyon-juniper communities on calcareous or sandy soils between 5,575 and 8,000 feet elevation.	No	No known locations	Not known on the Dixie National Forest
Pine Valley goldenbush (<i>Haplopappus crispis</i>)	Endemic to the Pine Valley Mountains in Iron County at elevations of 5,970-9,200 feet. Occurs in moderately open areas in association with ponderosa pine, manzanita, fir, and aspen.	No	No	Known on Pine Valley
Pinyon penstemon (<i>Penstemon pinorum</i>)	Endemic to the Pine Valley Mountains in Iron County on pinyon-juniper communities between 5,600 and 5,800 feet elevation.	Yes	Yes	Known on Pine Valley
Podunk groundsel (<i>Senecio malmstenii</i>)	Endemic on the Sevier-Markagunt and Paunsaugunt plateaus in Iron, Kane, and Garfield counties in bristlecone pine, spruce-fir, and mixed conifer woodlands on steep talus slopes of the Claron Limestone at about 8,790-10,512 feet elevation.	Yes	Yes	Known on Cedar City, Escalante, and Powell

Species (Scientific name)	Habitat Suitability Based On:	Further Analysis?*	Habitat currently in areas open to cross-country travel?	Presence & Location
Rabbit Valley gilia (<i>Gilia caespitosa</i>)	Endemic to Wayne County on pinyon-juniper communities on the Carmel and Navajo formations between 5,200 and 8,515 feet elevation.	Yes	Yes	Known on Teasdale
Red Canyon beardtongue (<i>Penstemon bracteatus</i>)	Endemic in Garfield County on ponderosa pine, pinyon-juniper, limber pine, and bristlecone pine-manzanita communities on the pink and white limestone members of the Wasatch Formation between 6,900 and 8,320 feet elevation.	Yes	Yes	Known on Powell
Reveal paintbrush (<i>Castilleja parvula</i> var. <i>revealii</i>)	Ponderosa pine/bristlecone pine community on gravelly soils of the Wasatch Limestone Formation between 7,500 and 8,300 feet elevation.	Yes	Yes	Known on Cedar City, Escalante, and Powell
Rock tansy (<i>Sphaeromeria capitata</i>)	Disjunct populations in Garfield County on bristlecone pine on Cedar Breaks Limestone at about 5,000-7,800 feet elevation.	Yes	Yes	Known on Powell
Table Cliff milkvetch (<i>Astragalus limnocharis</i> var. <i>tabulaeus</i>)	Endemic to southcentral Utah in Garfield County on steep, unstable limestone formations on the pink member of the Wasatch Limestone Formation, at 9,200-10,170 feet elevation.	Yes	Yes	Known on Escalante; Suspected on Powell
Tushar paintbrush (<i>Castilleja parvula</i> var. <i>parvula</i>)	Alpine areas on igneous gravels and outcrops and elevation, between 10,000 and 12,100 feet.	No	No known locations	Not known on the Dixie National Forest
Widtsoe buckwheat (<i>Eriogonum aretiodes</i>)	Endemic to central Garfield County on bristlecone pine, ponderosa pine, Douglas-fir, and Rocky Mountain juniper communities on the Pink Limestone member of the Wasatch Formation between 7,400 and 8,710 feet elevation.	Yes	Yes	Known on Escalante and Powell
Yellow-white catseye (<i>Cryptantha ochroleuca</i>)	Associate with pinyon-juniper, ponderosa pine, and bristlecone pine communities on the pink limestone member of the Wasatch Formation, between 6,500 and 9,000 feet.	Yes	Yes	Known on Escalante and Powell

Source: Madsen 2004.

* If "Yes," the proposed project's potential effects on this species will be analyzed further in this document. If "No," no further analysis will be conducted.

We have determined that the following plants have either no known location on the Dixie National Forest, or have known locations confined within areas that are closed to cross country travel (motorized use is restricted to designated routes), and where no new or closed routes resulting from this decision will be excluded from further analysis.

1. *Astragalus henrimontanensis* (Dana milkvetch),
2. *Astragalus zionis* var. *vigulus* (guard milkvetch),
3. *Haplopappus crispis* (Pine Valley goldenbush),
4. *Lepidium montanum* var. *neeseae* (Neese's peppergrass),
5. *Potentilla angelliae* (Angell's cinquefoil), and
6. *Astragalus limnocharis* var. *limnocharis* (Navajo Lake milkvetch).

This determination is based on life histories, field surveys, and habitat assessments for the Sensitive plant species on the Dixie National Forest (Rodriguez 2004).

Table 2. Threatened Plant Species That Occur on the Dixie National Forest

Species (<i>Scientific name</i>)	Habitat Suitability Based On:	Further Analysis?	Habitat currently in areas open to cross-country travel?	Presence & Location
Last Chance townsendia (<i>Townsendia aprica</i>)	Associated with pinyon/juniper and salt desert shrub communities on clay-silt soils of the Arapien and Mancos Shale formations in habitats that range in elevation from 6,000 to over 8,000 feet.	Yes	Yes	Known on Teasdale

Miles of routes open to motorized vehicles along with the percent of areas open to cross-country travel in regards to Threatened and Sensitive plants were used to help determine effects of this project on the plants. Presently 61 percent of the Forest is open to cross-country motorized travel.

Noxious Weeds

Noxious weeds continue to be found on the Dixie National Forest. A formal inventory for weeds shows major highways to be a principal means of introduction of weeds to the Forest. New infestations have been found along highways and other roads annually since a noxious weed inventory has been implemented. Essentially everything that moves including wind and water is a potential means of spread of noxious weeds. Seeds can be caught up in undercarriages, bumpers, grills, and in many crevices while driving through contaminated areas to be deposited later while traveling on public lands. Rough mountainous roads shake loose particles that have been deeply embedded in faraway crevices to be deposited on the road. Many weed seeds have propagated in cattleguards, washboard roads, and along 4-wheel-drive roads where seeds have been shaken loose.

IV. Effects of the Alternatives

Alternative Comparison

Table 3 displays the miles of routes open to public use, both full size vehicles and OHV, by alternative. The third column displays a percentage comparison by alternative of all motorized routes open to the public between Alternative A, the No Action Alternative. The final column portrays the acres open to cross-country travel. The mileage for Alternative A includes all unauthorized routes located in the 61 percent of the Forest open to cross-country travel. Alternatives B, C, and D all have a decrease in miles of open routes when compared to Alternative A. Alternative E, however, shows a 5 percent increase in open routes as this alternative would add unauthorized routes to the system compared to Alternative A, which would not add any unauthorized routes to the system.

Table 3. Miles of Routes and Acres Open to Cross-country Travel by Alternative

Alternative	Miles of Motorized Routes Open to the Public	% Change in Miles of Motorized Routes Compared to Alt A	Acres Open to Cross-country Travel
A	4,275	N/A	1,150,113
B	1,867	54% decrease	0
C	2,173	49% decrease	0
D	2,742	36% decrease	0
E	4,563	7% increase	0

Direct and Indirect Effects

Effects for Alternative A (No Action)

Alternative A – Effects Common to Known Threatened and Sensitive Plants in the Project Area

This alternative allows cross-country travel on 61 percent of the Forest. The areas open to cross-country travel encompass habitat and known populations of 18 Sensitive species and 1 Threatened species (*Townsendia aprica*). These 19 species and their habitat located in areas open to cross-country travel are at risk of habitat degradation and destruction of plants from off-highway vehicles (OHVs) crushing the plants, disturbing the habitat, and by potentially introducing invasive species to the area. Cross-country travel can contribute to noxious weed and invasive species introduction into uninfested areas and can aid in expanding existing populations. Noxious weeds and invasive species are aggressive plants that can take over an area choking out the native species (Gelbard and Belnap 2003).

Alternative A – Effects Common to *Townsendia aprica*

There are known locations of the federally-listed species *T. aprica* that occur in areas open to cross-country travel. These populations are located adjacent to 7.11 miles of roads on the Teasdale portion of the Fremont River Ranger District. Currently 5.61 miles of these roads are open to all motorized travel and 1.5 miles are open to full-size vehicles for administrative use and to OHVs for public use. Due to the existing locations of *T. aprica* within areas open to cross-country travel and along routes that have motorized vehicle use, there is a risk of degradation and decline of these populations. Increased interest in public lands coupled with the increasing numbers of the new side-by-side ATVs will result in an increase in motorized activity (A & A 1994, U.S. Census Bureau 2007). This increased activity will likely increase the disturbance to populations of *T. aprica*. Examples were documented from one trail where allowable motorized activity was moving into areas occupied by *T. aprica*. Over time, the habitat for this species may begin to erode and compromise the unique nature of these ecosystems (Campbell 2006).

Alternative A poses the greatest potential risk to *T. aprica* populations and habitat due to the potential degradation to *T. aprica* habitat and potential adverse effect on the populations.

Determinations for Alternative A

Sensitive Species with Known Locations on the Dixie National Forest in Areas Open to Cross-country Travel

It is determined that the 18 sensitive species located in areas open to cross-country travel would have some impacts, increasing with escalating motorized use on public lands (A & A Research 1994, U.S. Census Bureau 2007) under Alternative A because of their vulnerability to overland OHV activities. These 18 species are:

1. *Astragalus limnocharis* var. *tabulaeus* (Table Cliff milkvetch),
2. *Botrychium paradoxum* (paradox moonwort),
3. *Castilleja aquariensis* (Aquarius paintbrush),
4. *Castilleja parvula* var. *revealii* (reveal paintbrush),
5. *Cryptantha ochroleuca* (yellow-white catseye),

6. *Cymopterus minimus* (Cedar Breaks biscuitroot),
7. *Eriogonum aretioides* (Widtsoe buckwheat),
8. *Gilia caespitosa* (Rabbit Valley gilia),
9. *Heterotheca jonesii* (Jones goldenaster),
10. *Cymopterus beckii* (pinnate spring-parsley)
11. *Penstemon bracteatus* (Red Canyon beardtongue),
12. *Penstemon parvus* (little penstemon),
13. *Penstemon pinorum* (pinyon penstemon),
14. *Salix arizonica* (Arizona willow),
15. *Senecio malmstenii* (podunk groundsel),
16. *Silene petersonii* (Maguire campion),
17. *Sphaeromeria capitata* (rock tansy), and
18. *Thelesperma subnuda* var. *alpine* (Bicknell thelesperma).

Federally-listed Townsendia aprica

It has been determined that Alternative A, the No Action Alternative, would have the potential to impact populations of this federally-listed threatened species. This determination is based on the fact that suitable habitat and a few individuals in some populations may continue to be affected due to the open OHV areas with *T. aprica* populations, while other populations will not be affected. In all cases, where suitable habitat and a few individual plants of *T. aprica* may be affected, my determination is that the population as a whole will not be at risk.

Effects to Noxious Weeds

The USDA Forest Service has sponsored a guide entitled USDA-Forest Service Guide to Noxious Weed Prevention Practices (USDA 2001). This practices identify areas at high risk for exposure to noxious weed seeds/plant parts to be identified and monitored. The highest priority areas are roads, trails, and campsites. Under Alternative A, the number of acres that must be monitored for noxious weeds is unmanageable, increasing the chance of missing new noxious weed sites exponentially. When early detection fails we risk the chance that weed infestations will spread undetected to the point that eradication becomes impossible, resulting in a threat to all vegetation. Alternative A creates a higher risk to resources than any of the action alternatives.

Effects for All Action Alternatives (Alternatives B, C, D, and E)

Effects Common to Sensitive Species

The impact to sensitive plants will increase proportional to the increased number of miles of designated routes within each Sensitive plant colony. All action alternatives remove Forest acres designated for cross-country travel and, by so doing, reduce the impact that cross-country travel can have on plant populations and their habitat. In addition the risk of exposing these colonies and unadulterated acres of the Forest to invasive species will decrease proportional to the reduction of miles of designated routes.

None of the motorized trails proposed for construction in Alternatives D and E are located within occupied habitat for Sensitive species.

Effects to *Townsendia aprica* Under All Action Alternatives (Alternatives B, C, D, and E)

The action alternatives address existing routes adjacent to *T. aprica* populations on the Teasdale portion of the Fremont River Ranger District differently. Under Alternatives B and C, 5.58 miles of routes would remain open only to administrative motorized use. Under Alternative D, those same 5.58 miles of routes would remain open to all uses with proposed mitigation (see the Recommended Conservation Measures to Avoid, Minimize, or Mitigate Adverse Effects section beginning on page 17). Also under Alternative D, 1.5 miles would remain open to both administrative use and OHV use by the public. Under Alternative E, 7.11 miles would remain open to all motorized use. Due to the motorized use on these routes near populations and habitat, there is a risk to the known populations. Motorized traffic creates the potential for transporting noxious weeds and invasive species seeds into *T. aprica* habitat (USDA 2001). An invasion of noxious and invasive species could degrade the habitat compromising *T. aprica* populations. Of the action alternatives, Alternative E poses the greatest risk to this Threatened plant. Alternatives B and C pose the least risk, and Alternative D falls in the middle for risk. Table 4 shows a mileage comparison of the miles of routes associated with known *T. aprica* populations by action alternative.

Table 4. Miles of Routes by Designation and Alternative Adjacent to *Townsendia aprica* Populations

Alternative	Miles Open to Administrative Use	Miles Open to Administrative Use and Public OHV Use	Miles Open to All Uses
B	5.58	0	0
C	5.58	0	0
D	0	1.5	5.58
E	0	0	7.11

None of the motorized trails proposed for construction in Alternatives D and E are located within *T. aprica* habitat.

Determinations for the Action Alternatives (Alternatives B, C, D, and E)

Sensitive Species with Known Locations on the Dixie National Forest

It is determined that the action alternatives (Alternatives B, C, D, and E), all of which close the Forest to cross-country travel and restricts travel to designated routes, would have no affect on any populations of the 18 analyzed Sensitive plant species with known populations on the Dixie National Forest. (Map 4-20) This determination is based on life histories, field surveys, and habitat assessments for the Sensitive plant species on the Dixie National Forest as described Rodriguez 2004 overlaid with the different proposed alternatives on the previous mentioned maps.

*Federally-listed *Townsendia aprica**

It is determined that Alternatives B and C would have no detrimental effect. Under these alternatives cross-country travel is closed and travel routes are limited; these alternatives have deterred possible future damage. This determination is based on life histories, field surveys,

and habitat assessments for this Threatened plant species on the Dixie National Forest as described in Rodriguez 2004 and as indicated in Table 5 on page 16.

It is determined that Alternatives D and E would have a **may affect, not likely to adversely affect** determination for populations of *T. aprica*. This determination is based on the fact that suitable habitat and a few individuals in some populations may continue to be affected, while other populations will not be affected. In all cases, where suitable habitat and a few individual plants of *T. aprica* may be affected, my determination is that the population as a whole will not be at risk.

In any case, any of the action alternatives would be more restrictive than the current allowable use (Alternative A). Populations of *T. aprica* would be benefited over time due to the substantial reduction of the area where motorized activity would be allowed.

Cumulative Effects

Cumulative Effects Common to All Alternatives and Districts

Under the National Environmental Policy Act, cumulative effects are the incremental effects of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

The cumulative effects area for rare plants is the Dixie National Forest boundary to include the Fremont River Ranger District.

The cumulative effects analysis is grouped into eight categories: Utilities, Oil and Gas, Transportation, Recreation, Vegetation Treatments, Land Exchange and Easements, Special Use Permits, and Grazing. Details of each project associated with these groups can be found in the project record (USDA 2008).

Utilities

Proposals for new power lines, telecommunication facilities, water lines and storage tanks to be located on the forest are received annually. All these projects result in additional disturbance opening sites to noxious weeds however there would be no greater threat when combined with the implementation of any alternative. Routes used for utilities are closed to the public when combined with any alternative they work in unison to manage motorized activities. It is determined that there will be no additional cumulative effect to rare plants.

Oil and Gas

Site-specific analysis will be done when specific oil and gas projects are proposed and specific locations are known. Potential for disturbance is based on number of roads estimated in Reasonably Foreseeable Development Scenario (specific to oil and gas) could introduce noxious weeds. Disturbance and heavy equipment creates exposure and opportunity for noxious weed seeds and plant parts to become established; however there would be no greater threat when combined with the implementation of any alternatives. Rare plants will remain unchanged

Transportation

Closed NFS (Level 1 Maintenance) Roads

These roads are designated National Forest System (NFS) roads that have been closed to use but that may actually be operationally open. In recent years these roads have been physically closed, waterbars have been installed, and roadbeds and cut and fill slopes have been scarified and seeded. However, many of these roads still need to be physically closed.

Cross-country Travel

All action alternatives would result in the elimination of cross-country travel. This action would reduce current and potential future interaction between cross-country travel and other forest actions, thereby reducing the threat to sensitive plant populations. The No Action Alternative has the highest potential to result in adverse cumulative impacts to sensitive plant populations. This is primarily related to the continuation of cross-country travel on the 61 percent of the Forest where it is currently allowed.

Recreation (Dispersed Camping and ATV Use)

These activities are widespread across the Forest. ATV use and cross-country travel are commonly related activities that occur within and near popular dispersed camping areas. Selection of Alternative A would result in cumulative detrimental impacts associated with dispersed camping and ATV use on the sensitive plant populations within areas open to cross-country travel. Additionally, routes included within all action alternatives that increase the designated ATV system would present the potential for adverse cumulative effects associated with dispersed camping. This would result in minimal additional impacts to sensitive plants.

Vegetation Treatments

Proposals for new timber sales are an annual occurrence on the Forest. Alternative A will continue current impacts with no changes to sensitive species impacts. All action alternatives actually decrease impacts to sensitive plants. These reductions are proportional to miles of roads closed.

Land Exchange and Easements

Land exchanges and easements may require new travel routes increasing miles of roads when combined with alternative A there will be a net increase in road impacts. The action alternatives will curtail this affect minimizing impacts to noxious weed spread and sensitive species degradation.

Special Use Permits

Each special use permit increases use of public lands when combined with alternative A more overall area is open to degradation and therefore increases opportunity for noxious weed seeds to be introduced in remote areas as well as degradation to sensitive species populations. The action alternatives concentrate these uses onto designated routes eliminating the impact.

Grazing

Livestock grazing has been practiced on what are now Dixie National Forest lands since as early as 1873 (Hinton 1987). Since then many changes have been made to the travel routes on the forest. Known sites of *T. aprica* have been identified primarily on the Pleasant Creek cattle allotment. Alternative A will have no more cumulative affect than it has currently had to noxious weeds, sensitive and threatened plants. The action alternatives will improve our ability to monitor travel routes for noxious weeds and reduce cross-country impacts on sensitive species cumulatively as well as reducing the stresses on plant communities giving vegetative resources the advantage.

Summary

Alternatives B, C, D and E (in the same order of preference) would result in beneficial cumulative effects to noxious weeds and sensitive plants. In response to past, present and future implementation of travel management actions on the Forest. Some of these actions are included in signed decisions that have yet to be implemented on the ground. All of these projects either reduced total motorized route mileage or reduced route encroachment on sensitive plant populations. Alternative A would have a continuance of negligible cumulative effects as it would allow continued cross-country travel on 61 percent of the forest.

V. Summary of Determination of Effects

The following three tables display the determinations for each Threatened and Sensitive species. The conclusions are based on the exposure to open designated routes and percent of habitat open to cross-country travel.

Table 5. Summary Determination of Effects – Threatened Species

Species	Presence	Alternative				
		A	B	C	D	E
<i>Townsendia aprica</i>	Known	ME	NE	NE	ME	ME

NE = No effect

ME = May effect, not likely to adversely affect

Table 6. Summary Determination of Effects – Sensitive Species

Species	Alternative				
	A	B	C	D	E
<i>Astragalus henrimontanensis</i>	NI	NI	NI	NI	NI
<i>Astragalus limnocharis</i> var. <i>limnocharis</i>	NI	NI	NI	NI	NI
<i>Astragalus limnocharis</i> var. <i>tabulaeus</i>	MII	NI	NI	NI	NI
<i>Astragalus zionis</i> var. <i>vigulus</i>	NI	NI	NI	NI	NI
<i>Botrychium paradoxum</i>	MII	NI	NI	NI	NI
<i>Castilleja aquariensis</i>	MII	NI	NI	NI	NI
<i>Castilleja parvula</i> var. <i>revealii</i>	MII	NI	NI	NI	NI

Species	Alternative				
	A	B	C	D	E
<i>Cryptantha ochroleuca</i>	MII	NI	NI	NI	NI
<i>Cymopterus minimus</i>	MII	NI	NI	NI	NI
<i>Eriogonum aretioides</i>	MII	NI	NI	NI	NI
<i>Gilia caespitosa</i>	MII	NI	NI	NI	NI
<i>Haplopappus crispus</i>	NI	NI	NI	NI	NI
<i>Heterotheca jonesii</i>	MII	NI	NI	NI	NI
<i>Lepidium montanum</i> var. <i>claronese</i>	MII	NI	NI	NI	NI
<i>Lepidium montanum</i> var. <i>neeseae</i>	NI	NI	NI	NI	NI
<i>Penstemon bracteatus</i>	MII	NI	NI	NI	NI
<i>Penstemon parvus</i>	MII	NI	NI	NI	NI
<i>Penstemon pinorum</i>	MII	NI	NI	NI	NI
<i>Potentilla angelliaea</i>	NI	NI	NI	NI	NI
<i>Salix arizonica</i>	MII	NI	NI	NI	NI
<i>Senecio malmstenii</i>	MII	NI	NI	NI	NI
<i>Silene petersonii</i>	MII	NI	NI	NI	NI
<i>Sphaeromeria capiata</i>	MII	NI	NI	NI	NI
<i>Thelesperma subnudum</i> var. <i>alpinum</i>	MII	NI	NI	NI	NI

NI = No impact. No effect is expected.

MII = May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing. Effects in the project area are not expected to be significant, and the species and its habitat will remain well-distributed.

VI. Recommended Conservation Measures to Avoid, Minimize, or Mitigate Adverse Effects

Project design features and mitigation measures help to minimize adverse effects to Threatened, Endangered, Proposed, and Sensitive plant species and their habitat. Fortunately, this motorized travel plan is timely for rare plants as populations and interest in the National Forest has exploded (U.S. Census Bureau 2007, GOPB 2007). The action alternatives would have the potential to benefit Threatened and Sensitive plants on the Dixie National Forest, though Alternatives B, C, and D would do so to a much greater degree than would Alternative E.

The following table displays mitigation measures related to rare plants.

Threatened, Endangered, Proposed, and Sensitive Plants Mitigation Measures

Recommendations for Rare Plant Protection

- Do not designate fuelwood collection areas where a population of any Forest Service threatened, endangered, proposed, and sensitive plant species is known to occur.

Table 7 displays mitigation measures related to noxious weeds that will help to reduce the risk to Threatened, Endangered, Proposed, and Sensitive plant populations and habitat by the invasion and expansion of noxious weeds and invasive species.

Table 7. Invasive Species Mitigation Measures

Mitigation Measures
During motorized trail construction and road obliteration activities, require that all off-road and maintenance equipment is free of noxious weed seeds when moving equipment into a new area and/or moving between areas that are known to contain noxious weeds. Specifically, use federal form B6.35 – Equipment Cleaning.
Use certified weed-free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System lands. If state-certified straw and/or mulch is not available, the Forests should require sources certified to be weed free using the North American Weed Free Forage Program standards or a similar certification process.
Certified “weed-free” seed mix should be required for areas that are seeded.
Avoid weed-infested areas for use as staging or parking areas.
Complete post-project surveys to document infestations and to allow treatment of noxious weeds in areas of disturbance.

VII. Other Assessment Considerations for Rare Plants and Invasive Species

Three other topics are considered jointly for the rare plants and invasive species sections discussed above: short-term uses and long-term productivity, unavoidable adverse effects, and irreversible and irretrievable commitments of resources. Each of these topics is considered in the context of Alternative A (the No Action Alternative) and Alternatives B, C, D, and E (the action alternatives).

Short-term Uses and Long-term Productivity

The No Action Alternative does allow the most short-term use; however, this use creates the most potential for impacts to rare plants and their habitats and the greatest likelihood of a more rapid increase of invasive species, thus resulting in loss productivity in the long-term.

The four action alternatives greatly reduce the short-term use for a substantial area of the Forest. Long-term productivity would be enhanced for rare plants and their habitats. Also, the elimination of cross-country travel over the forest would reduce the risk of exposing remote areas to noxious weeds.

Unavoidable Adverse Effects

It is inevitable that some violations, intentional or unintentional, of the motorized travel plan will occur. It is anticipated that implementation of this project will reduce resource damage from unavoidable effects because the travel rules would be simpler, more consistent, and explained better to the public. Also, appropriate law enforcement may reduce unauthorized activity.

Irreversible and Irretrievable Commitments of Resources

For this report we have identified the threatened and sensitive plants that if lost would be both an irreversible act as well as an irretrievable resource. Under all action alternatives there is a reduced affect to these plants where cross country travel has been restricted. There is a further reduction as the number of designated routes within habitat areas is confined.

VIII. Contacts

Primary Reviewers: Mark Madsen, Forest Botanist, Dixie National Forest, and David Tait, Forest Botanist, Fishlake National Forest

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