

Noxious Weeds

Introduction

Because vehicle travel is a major factor and vector in the introduction and spread of noxious weeds, this project may affect the distribution and abundance of these species across the Modoc National Forest. Additionally, the Chief of the Forest Service has determined that invasive species are one of four significant threats to Forests and rangelands. Because the presence of these invaders affects many other resources such as soil, wildlife habitat, and sensitive plants, it is important to analyze and understand the effects of the project on noxious weed populations.

This section describes the affected environment for invasive plant species (weeds). It will describe the area potentially affected by the alternatives and existing resource conditions within that area. Measurement indicators are used to describe the existing conditions for the Forest, and to quantify and describe the extent to which the proposed action and alternatives meet project objectives and address resource concerns. Each alternative is then evaluated and compared using these measurement indicators.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action that is relevant to the management and prevention of noxious weeds includes the following:

The Forest Service Manual (FSM) 2081.03 requires that a weed risk assessment be conducted when any ground disturbing activity is proposed. A weed risk assessment determines the risk of introducing or spreading noxious weeds associated with the Proposed Action. Projects having moderate to high risk of introducing or spreading noxious weeds must identify noxious weed control measures that must be undertaken during project implementation.

Executive Order 13112 of Feb. 3, 1999 directs Federal agencies to prevent the introduction of invasive species, detect and respond rapidly to and control such species, not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Sierra Nevada Forest Plan Amendment (SNFPA): The Record of Decision (ROD) for the 2004 Sierra Nevada Forest Plan Amendment identified standards and guidelines applicable to motorized travel management and noxious weeds, which will be considered during the analysis process.

Modoc National Forest Land and Resource Management Plan (MDF LRMP): The 1991 Modoc LRMP Standards and Guidelines direct the Forest to control noxious weeds and perform annual monitoring of noxious weed population levels.

Effects Analysis Methodology

Noxious Weed Species Considered

The eighteen noxious weed species being considered in this analysis are invasive, non-native plants that possess one or more of the characteristics of an invasive weed and are undesirable on Modoc National Forest lands (Table 3-62). Based on Executive Order 13112, issued in 1999, a

species is considered invasive if it (a) is non-native to the ecosystem under consideration, and (b) its introduction causes or is likely to cause economic or environmental harm or harm to human health (USDA Forest Service 2004). This analysis includes invasive plant species from the California Department of Food and Agriculture list of noxious weeds (CDFA 2008) and the Cal-IPC California Invasive Plant Inventory (Cal-IPC 2008). All weed species identified on the Forest are of concern with regard to their potential to spread and threaten native ecosystems. The Forest, however, has prioritized weed infestations for tracking based upon the aggressiveness of the weed species, the degree of regional concern, and feasibility of control. While some species listed in statewide inventories are not identified as a high priority for control efforts and are not specifically addressed in this analysis (i.e., cheatgrass, bull thistle, Russian thistle, Medusahead), it remains a priority to prevent the further spread of these species via management activities. However, control of all known infestations of these lower-priority species is not currently feasible and they are likely to persist throughout the life of this project.

A weed occurrence refers to a relatively discreet group of individuals, separated from the next nearest group of the same species by at least ¼ mile. Many of the weed occurrences are immediately adjacent to existing travel routes, due to the disturbed habitat available along the road edges, and the vehicles acting as vectors for weed seeds or other propagules.

Geographic Area Evaluated

Direct and indirect effects to noxious weeds under each alternative will be analyzed within the geographic extents described below. Cumulative effects will be analyzed within the administrative boundaries of the Modoc National Forest, exclusive of the South Warner Wilderness Area.

Alternative 1 (No Action)

For the No Action alternative, which allows cross-country travel, the direct and indirect effects will be analyzed within the administrative boundaries of the Modoc National Forest, excluding the South Warner Wilderness Area, a total of 1,609,466 acres. The existing condition discussion below will focus on this analysis area, with some broader background information provided for context. Alternative 2 (Proposed Action), 3 (Cross-Country Travel Prohibition), 4 (Resource Impact Reduction), and 5 (Expanded Recreational Mixed Use)

The geographic extent evaluated for direct and indirect effects will include lands within the administrative boundaries of the Modoc National Forest, excluding the South Warner Wilderness Area, but with particular emphasis on those areas of the Forest within 100 feet of proposed routes. This buffer encompasses the distance that vehicles are allowed to drive off roads for parking and camping. In general, weed infestations located near proposed routes will have a high risk of spread to areas along the route and to other parts of the Forest.

Assumptions

1. That new infestations will continue to occur with continued motorized use of routes.
2. That existing weed infestations will likely spread, and that the rate of spread will be increased by vehicular activity. Infestations located along routes where vehicles drive will spread further along the route. Motor vehicles will bring weed seeds and propagative parts from home areas and other areas where they traveled.
3. That routine road maintenance includes an obligation to identify and treat new noxious weed occurrences, thereby reducing the risk of noxious weed establishment. Maintenance level 3 roads receive more frequent maintenance, and would therefore have a greater reduction in weed risk from road maintenance. Maintenance level 2 roads receive less frequent road

maintenance, and would experience less of a weed risk reduction from maintenance than would level 3 roads.

4. For completing the risk assessments, the following categories of risk are assigned to determine risk level of noxious weed introduction or spread:

High risk: (1) presence of known weed populations along a route, (2) known A-rated weed populations within 100 feet of a route, or (3) a lack of inventory or survey of a route.

Medium risk: known B- or C-rated weed populations within 100 feet of a route.

Low risk: route and vicinity surveyed and noxious weed populations not found

Noxious Weeds Effects Analysis Methodology by Action

Measurement indicators have been developed for each action to quantify the direct and indirect effects of this project upon noxious weed species. For all actions, a short-term time frame is defined as one year, a long-term time frame is defined as twenty years, and the spatial boundary is defined as the Modoc National Forest, excluding the South Warner Wilderness Area and privately owned in-holdings within the proclaimed Forest boundary. These measurement indicators reflect research that identifies roads as a significant vector for weed establishment and spread.

Action: Direct and indirect effects of the prohibition of cross-country motor vehicle travel

1. Number of unauthorized routes within or adjacent to noxious weed sites
2. Acres of noxious weed sites within 100 feet of unauthorized routes
3. Total number of weed sites within 100 feet of unauthorized routes
4. Number of unauthorized routes assigned “high risk” of noxious weed introduction or spread, defined as follows:

High risk: (1) presence of known weed populations along route, (2) known A-rated weed populations within 100 feet of route, or (3) a lack of inventory or survey of route

Medium risk: known B- or C-rated weed populations within 100 feet of route

Low risk: route and vicinity surveyed and noxious weed populations not found

Action: Direct and indirect effects of adding facilities (presently unauthorized roads, trails, or areas) to the NFTS

1. Miles of routes added to the NFTS within or adjacent to noxious weed sites
2. Acres of noxious weed sites within 100 feet of proposed routes
3. Total number of weed sites within 100 feet of unauthorized routes
4. Number of unauthorized routes assigned “high risk” of noxious weed introduction or spread, defined as follows:

High risk: (1.) presence of known weed populations along route, (2.) known A-rated weed populations within 100 feet of route, or (3.) a lack of inventory or survey of route

Medium risk: known B- or C-rated weed populations within 100 feet of route

Low risk: route and vicinity surveyed and noxious weed populations not found

Action: Direct and indirect effects of identifying vehicle class and season of use on the NFTS

1. Miles of NFTS roads proposed for mixed use within or adjacent to noxious weed sites

2. Acres of noxious weed sites within 100 feet of NFTS road proposed for mixed use
3. Total number of weed sites within 100 feet of NFTS roads proposed for mixed use
4. Total miles of NFTS roads proposed for mixed use
5. Miles of NFTS roads proposed for mixed use within or adjacent to noxious weed sites
6. Acres of noxious weed sites within 100 feet of NFTS road proposed for mixed use
7. Total number of weed sites within 100 feet of NFTS roads proposed for mixed use
8. Total miles of NFTS roads proposed for mixed use

Action: Cumulative Effects

Total miles of proposed routes available for public use

Data Sources

Data used for this analysis comes from the Modoc National Forest noxious weed inventory, which is a spatial database compiled from data collected through 2004, as well as the Modoc National Forest field noxious weed record sheets. There have been no systematic noxious weed surveys on the Forest since 2004. No route-specific surveys for noxious weeds were conducted.

Affected Environment and Environmental Consequences

Affected Environment

On National Forest System lands as of 1999, an estimated 6-7 million acres were infested with weeds, and potentially increasing at a rate of 8 to 12 percent per year (USDA Forest Service 1999). Similar trends have been observed on the Modoc National Forest, as the number of locations and extent of existing populations of species such as dyer’s woad, Dalmatian toadflax, Scotch thistle, knapweeds, Medusahead, and others have increased on the Forest over the past several years. There are currently 539 mapped weed occurrences on the Forest, with a total of 7,941.19 mapped infested acres (Table 3-69). The actual total infested area of the Forest is considerably higher, since widespread infestations of Medusahead, cheatgrass, bull thistle, and Russian thistle have not been documented at all, and other species such as dyer’s woad are not fully documented.

Table 3-69. Modoc National Forest Noxious Weed Inventory within Affected Environment

Species	Common Name	CDFA rating	Cal-IPC rating	Number of Occurrences	Gross Acres
<i>Cardaria chalapensis</i>	Lens-podded whitetop	B	moderate	4	8.96
<i>Cardaria draba</i>	Heart-podded hoarycress	B	moderate	1	0.4
<i>Cardaria pubescens</i>	Hairy whitetop	B	limited	2	0.17
<i>Carduus acanthoides</i>	Plumeless thistle	A	limited	1	0.1
<i>Carduus nutans</i>	Musk thistle	A	moderate	12	6.87
<i>Centaurea diffusa</i>	Diffuse knapweed	A	moderate	12	10.65
<i>Centaurea stoebe</i>	Spotted knapweed	A	high	13	5.14

Species	Common Name	CDFRA rating	Cal-IPC rating	Number of Occurrences	Gross Acres
<i>ssp. micranthos</i>					
<i>Centaurea solstitialis</i>	Yellow starthistle	C	high	10	2.3
<i>Centaurea virgata ssp. squarrosa</i>	Squarrose knapweed	A	moderate	5	0.18
<i>Cirsium arvense</i>	Canada thistle	B	moderate	34	11.93
<i>Crupina vulgaris</i>	Common crupina	A	limited	1	745.19
<i>Hypericum perforatum</i>	Klamathweed	C	moderate	8	8.79
<i>Isatis tinctoria</i>	Dyer's woad	B	moderate	62	6069.94
<i>Lepidium latifolium</i>	Tall whitetop	B	high	1	0.1
<i>Linaria dalmatica ssp. dalmatica</i>	Dalmatian toadflax	A	moderate	12	974.73
<i>Onopordum acanthium</i>	Scotch thistle	A	high	333	86.46
<i>Salvia aethiopsis</i>	Mediterranean sage	B	limited	27	11.61
Total				539	7941.19

Environmental Consequences

The following sections provide a discussion of the direct, indirect, and cumulative effects of each alternative on noxious weeds. It is important to note that the analysis below represents what is known about motor vehicle impacts along unauthorized routes at this point in time. Designation of a route is expected to increase and concentrate motor vehicle use; this has the potential to increase the risk of noxious weed introduction and spread. Routes, infestations, and mitigations or control measures will need to be re-evaluated on a continual basis to assess and address the risk from noxious weeds.

General Types of Impacts: Direct and Indirect Effects

Direct effects to weed plants would include the crushing of plants by vehicle traffic. Of greater concern are the indirect effects of roads on noxious weed populations, which include reasonably foreseeable effects that are further removed in time or distance. These indirect effects are captured by research identifying roads as (1) disturbances providing suitable habitat for weeds, and (2) vectors for weed spread (Christen and Matlack 2008, Gelbard and Belnap 2003, Gelbard and Harrison 2003). Many studies have established a correlation between habitat disturbance and weed invasion (Sax 2002, Sher *et al.* 2002). While some disturbances such as fire or flooding can be considered natural phenomena, anthropogenic (human-caused) alterations to habitat such as road construction may also create suitable habitat for weeds (Byers 2002). Belcher and Wilson (1989) found that 95 percent of leafy spurge infestations on a mixed-grass prairie were associated with disturbance from vehicle tracks, road construction, or fireguards. Noxious weeds may colonize disturbed sites such as roads because physical barriers that might otherwise keep them in check, such as unsuitable light, moisture or soil conditions, are removed (Parendes and Jones 2000). In addition, soil compaction caused by vehicle traffic may in some habitats favor

colonization by fast-growing weed species over slower-growing native perennials (Prose *et al.* 1987).

Roads function as vectors for weed spread as well. With human activities such as roads facilitating plant dispersal, noxious weeds may spread further and faster than average seed dispersal distances suggest (Von der Lippe and Kowarik 2007, Mack and Lonsdale 2001, Frenkel 1970). A study of roadside floras found that seeds of the species found along roadsides are also found in mud on the vehicles that travel them (Schmidt 1989). Seeds and propagules may be translocated in this way from home areas or from existing weed populations on the Forest. A study conducted in Glacier National Park found that weed species richness was higher at roadsides and decreased with increased distance from roads, suggesting that weeds were invading from those roads outward into surrounding vegetation (Tyser and Worley 1992). A study of California foothill grassland communities found that increased distance from roads was associated with decreased exotic forb species richness and increased native grass species richness, and emphasized the importance of roadless areas as *refugia* for native species (Gelbard and Harrison 2003). It follows that restricting motorized use to designated roads would decrease the potential for the introduction of weed seeds and propagules, and would eliminate disturbance to soils from motor vehicle use.

Alternative 1 (No Action)

Direct and Indirect Effects

Alternative 1 carries the highest risk of noxious weed introduction and spread. The largest impact of this alternative is from cross-country travel, which has the potential to introduce new noxious weeds to areas that are not currently infested and to facilitate the expansion of existing populations. Under this alternative, it is impossible to quantify when and where noxious weeds would be encountered, spread, or introduced by motor vehicles; therefore, the 491 miles of unauthorized routes are used as a proxy for current motor vehicle use on the Forest (aside from National Forest Transportation System (NFTS) roads). Of the 1660 unauthorized routes mapped on the Modoc National Forest, 24 have weed populations documented within 100 feet of the route. There are a total of 21 noxious weed occurrences documented within 100 feet of unauthorized routes (Table 3-70), and a total of 28.78 miles of unauthorized routes within 100 feet of a known weed occurrence.

Table 3-70. High-Priority Noxious Weed Populations Documented Within 100 Feet of an Existing Unauthorized Route

Species	CDFA Rating	# Occurrences	Gross Acres
<i>Cardaria chalepensis</i>	B	1	0.44
<i>Carduus nutans</i>	A	1	0.19
<i>Centaurea diffusa</i>	A	1	0.66
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	A	1	1.00
<i>Cirsium arvense</i>	B	5	0.28
<i>Isatis tinctoria</i>	B	4	59.97
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	2	8.52
<i>Onopordum acanthium</i>	A	5	2.02
<i>Salvia aethiopsis</i>	B	1	0.01

Species	CDFA Rating	# Occurrences	Gross Acres
Total		21	73.1

This alternative has the highest number of unauthorized routes considered at “high risk” for weed introduction and spread. Table 3-71 (below) summarizes the number of unauthorized routes considered at high risk of weed establishment and spread under Alternative 1, which would allow continued motorized travel on these routes.

Table 3-71. Risk Ratings for Unauthorized Routes

Indicator (number of unauthorized routes)	Low Risk	Medium Risk	High Risk
Known weed occurrences present			11
A-Listed weed w/in 100 ft. of route			7
No inventory or survey			1635
B- or C-listed weed w/in 100 ft. of route		7	
Surveyed ≥ 2001; no weeds found	0		
Total	0	7	1635

Under this alternative, motor vehicles traveling on and off unauthorized routes would continue to create areas of disturbance that are vulnerable to weed invasion, and carry weed seeds and other propagules to new locations (Banks *et al.* 2004, Ouren *et al.* 2007, Von der Lippe and Kowarik 2007). Noxious weeds would continue to reduce the quality of native plant communities by displacing native species, altering nutrient and fire cycles, degrading soil structure and decreasing the quality and availability of forage for wildlife (Bossard, Randall and Hoshovsky 2000). Under this alternative, all but the most inaccessible habitats would be at risk of noxious weed invasion and spread from cross-country motor vehicle travel.

OHVs interact directly and indirectly with noxious weeds primarily in these two general ways: (1) OHVs introduce weed propagules to new areas (Trombulak and Frissell 2000), and (2) OHVs alter the landscape by causing disturbance in various forms; for example, by altering local hydrology, compacting soil, raising dust, crushing plants not adapted to disturbance and promoting those which are, and suppressing native vegetation (Brooks and Lair 2005, Gelbard and Harrison 2005, Ouren *et al.* 2007). In this way, OHVs are capable of both introducing exotic weeds and simultaneously providing them with habitat (*cf.* Christen and Matlack 2008).

Cumulative Effects

Many Forest activities such as livestock grazing, timber harvesting, recreational use, fuels treatments and fire suppression, road and railroad maintenance, and special uses also have the capabilities of introducing noxious weeds and providing them with disturbed habitats upon which they may gain footholds. For a complete list of present and reasonably foreseeable Forest activities, see appendix H. Mitigations for these management activities would consist of adherence to the Modoc National Forest Integrated Weed Management Strategy (2005). Specific actions under this strategy include pre-project weed surveys, flagging and avoidance of noxious weed occurrences, washing of vehicles and equipment prior to entering the Forest, use of weed-free materials, minimizing of ground disturbance, and restoration of disturbed sites with native materials. Implementation of the Integrated Weed Management Strategy (USDA Forest Service 2005) minimizes the risk of noxious weed introduction and spread associated with future foreseeable actions.

The additional effects of the No Action alternative for noxious weeds would be a net increase of disturbed habitat due to OHV use, the probability that habitat disturbed due to other Forest

activities would remain disturbed for longer periods of time as OHV users drive in such areas, the augmented ability of weed propagules to travel quickly and distantly into and across the Forest, and the increased likelihood that whatever weeds do travel into or across the Forest would find amenable disturbed habitat into which they may be introduced. In sum, Alternative 1 compounds the negative effects of other Forest projects upon soils and native plant communities; intensifies, prolongs, and augments their creation of noxious weed habitat; and provides more opportunities for noxious weeds to be introduced and take advantage of these disturbed habitats. Under this alternative a total of 1,635 high risk unauthorized routes would continue to be used by OHVs, in addition to seven medium-risk routes. This would be combined with the 3,866 already established NFTS roads for a total of 5,508 roads open to motor vehicle use under Alternative 1, combined with the high risk of continuing proliferation of new user created routes across the Forest.

Action Alternatives

The following sections discuss the direct, indirect, and cumulative effects of each action alternative (Alternatives 2, 3, 4, and 5) on noxious weeds. Effects analysis focuses on cross-country motor vehicle use and addition of routes to the NFTS. Alternatives 2, 4, and 5 also include seasonal closures of some current NFTS roads, and re-classification of some existing roads for mixed use. It is possible that seasonal closures could slightly reduce the risk of noxious weed spread, and that allowing mixed use on established roads could minimally increase the risk of noxious weed spread.

Effects analysis for proposed route additions focuses on presence of known weed occurrences. Table 3-72 shows known noxious weed populations within 100 feet of proposed routes. More detailed discussion of each population will be found under each alternative.

Alternative 2 (The Proposed Action)

Direct and Indirect Effects: Prohibition of Cross-Country Motor Vehicle Travel and Addition of Proposed Routes

Alternative 2 would prohibit cross-country travel off NFTS roads, add 339 miles of existing unauthorized routes to the NFTS, add seasonal use restrictions to approximately 313 miles of existing NFTS roads, allow non-street legal vehicle access on an additional 138 miles of existing NFTS roads, and close Forest Roads 46B29HB, 44N08, and 44N01. This alternative carries a much lower risk of noxious weed introduction and spread than does Alternative 1. The prohibition of cross-country motorized travel would minimize the risk of weed establishment and spread along unauthorized routes not proposed for designation. Under Alternative 2, there are 15 routes that have weed populations documented within 100 feet of the route. There are a total of 15 noxious weed occurrences documented within 100 feet of unauthorized routes (Table 3-72), and a total of 16.09 miles of routes within 100 feet of a known weed occurrence (Table 3-72).

Table 3-72. Noxious Weed Species and Occurrences Within 100 Feet of an Alternative 2 Proposed Route

Species	CDFA Rating	Occurrence Number	Number of Occurrences	Proposed Route(s)	Number of Routes	Route intersects occurrence	Gross Acres
<i>Centaurea diffusa</i>	A	4		ML327		yes	0.66
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	A	8		ML181A		yes	1.00

Species	CDFA Rating	Occurrence Number	Number of Occurrences	Proposed Route(s)	Number of Routes	Route intersects occurrence	Gross Acres
<i>Cirsium arvense</i>	B	2		BA431		no	0.01
<i>Cirsium arvense</i>	B	4		BA200		no	0.01
<i>Cirsium arvense</i>	B	10		SS421		no	0.01
<i>Cirsium arvense</i>	B	11		SS421		no	0.01
<i>Cirsium arvense</i>	B	17		BA203		no	0.15
<i>Cirsium arvense</i>	B	18		BA203		no	0.10
<i>Isatis tinctoria</i>	B	8		ML328		no	0.04
<i>Isatis tinctoria</i>	B	9		ML328		no	0.11
<i>Isatis tinctoria</i>	B	13		ML327 ML328 ML336 ML404 ML405 ML406		yes	59.81
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	3		BA368		yes	9.54
<i>Onopordum acanthium</i>	A	58		ML373		yes	0.40
<i>Onopordum acanthium</i>	A	64		ML3		no	0.01
<i>Onopordum acanthium</i>	A	65		ML3		no	0.01
Total			15		15		71.87

Alternative 2 has a much lower risk of weed infestation and spread than Alternative 1. Under this alternative 1,166 unauthorized routes considered at “high risk” for weed introduction and spread would be added to the NFTS, as well as 4 routes with “medium risk”. Table 3-73 summarizes the number of unauthorized routes considered at high risk of weed establishment and spread under Alternative 2, which would permit continued motorized travel on these routes.

Table 3-73. Alternatives 2 and 5—Risk Ratings for Proposed Routes

Indicator (Number of Unauthorized Routes)	Low Risk	Medium Risk	High Risk
Known weed occurrences present			9

Indicator (Number of Unauthorized Routes)	Low Risk	Medium Risk	High Risk
A-Listed weed w/in 100 ft. of route			1
No inventory or survey			1156
B- or C-listed weed w/in 100 ft. of route		4	
Surveyed ≥ 2001; no weeds found	0		
Total	0	4	1166

The addition of 339 miles of unauthorized routes to the NFTS road system would allow continued motor vehicle traffic within 100 feet of 15 documented occurrences of noxious weeds. Most of these occurrences have not been treated, and can be expected to have increased in size since they were initially documented. Of those that have been treated, most were treated only once, and without follow-up treatments are likely still present and growing. Several occurrences have incomplete documentation of population size, and their current status is unknown. Details on these individual occurrences are described below.

Diffuse Knapweed (*Centaurea diffusa*)

There is one occurrence of diffuse knapweed (#4) which had approximately 50 plants in 2003. There is one occurrence of spotted knapweed (#8) which had more than 100 plants when it was treated by hand-grubbing in 2000. It was chemically treated in 2001 and 2002. Both of these knapweed species are deeply tap-rooted biennial to short-lived perennial species, which reproduce from their abundant seeds.

Canada Thistle (*Cirsium arvense*)

There are five occurrences of Canada thistle, a rhizomatous perennial which reproduces primarily from its roots, but which can also reproduce from seed. Occurrence #2 was documented in 2001 with over 1000 plants. This site has not been treated. Occurrence #4 was documented in 2002 with approximately 20 plants, and has not been treated. Occurrences #10, #17, and #18 have not been treated.

Dyer’s Woad (*Isatis tinctoria*)

There are three occurrences of dyer’s woad (#8, #9, and #13), a deeply tap-rooted biennial species which reproduces from its copious seeds. None has been treated.

Dalmatian Toadflax (*Linaria dalmatica*)

There is one occurrence of Dalmatian toadflax, a rhizomatous perennial which reproduces via its prolific seeds, its rhizomes, and by root fragmentation. Occurrence #3 has incomplete records, with no original sighting record or population record. It was chemically treated in 1999, 2000, 2001, and 2002.

Scotch Thistle (*Onopordum acanthium*)

There are three occurrences of Scotch thistle, a deeply tap-rooted biennial to short-lived perennial that reproduces from abundant and long-lived seeds. Occurrence #64 was chemically treated in 1998 . Occurrences #65 and #58 have not been treated.

The presence of noxious weed occurrences in proximity to proposed route additions would continue the currently present risk of vehicles spreading these weed species across the Forest. However, this risk is reduced by the prohibition of cross-country travel. Additional road closures of the Forest Road 46B29HB and the Level 2 Pumice Road would provide a small further reduction in the risk of weed spread. Seasonal closures of 312 miles of existing NFTS roads might also reduce weed spread risk by reducing the overall amount of travel on these roads, although these effects would probably be minimal. The proposed seasonal closures occur

primarily during the winter months, with some overlap into fall and spring. OHV use of these routes is often limited by snow conditions during winter months, regardless of an official closure. However, closures during spring months when routes are muddy could reduce weed risk, since sites are more vulnerable to disturbance and weed establishment when they are wet and muddy. Reclassification of existing NFTS roads to allow mixed vehicle use is not expected to have any effect on noxious weed risk, since there is no available evidence indicating that type of vehicle affects the risk of weed introduction or spread on established roads. The greatest reduction in weed risk in Alternative 2, relative to Alternative 1, would come from the prohibition of cross-country motor vehicle travel.

Direct and Indirect Effects – Mixed Use and Seasonal Closures on NFTS Roads

Motor vehicle use on established roads provides a vector for noxious weed spread within and adjacent to roads during all seasons and regardless of vehicle class. However, off-road vehicle tires may potentially carry more soil-bearing weed seed from one site to another than standard passenger vehicle tires, particularly during wet conditions. Since off-road vehicles are designed and intended for use off-road, these vehicles have a higher probability of having been driven through noxious weeds prior to entering Modoc National Forest than standard passenger vehicles, and therefore have a higher risk of transporting noxious weed propagules to the Forest. They also have a greater risk for entering known weed occurrences within the 30 foot buffer adjacent to NFTS roads, allowed for in the proposed Motor Vehicle Use Map (MVUM), than do passenger cars, due to their greater capacity to go off-road. There are currently 11 known occurrences of noxious weeds located within 100 feet of seven Level 3 NFTS roads proposed for mixed use classification under Alternative 2 (Table 3-74). Under this alternative, classification of these roads for mixed use would increase the risk of spreading weed propagules from these 11 known occurrences. It would also increase the risk of noxious weed introduction from off-Forest areas on all 138 miles of NFTS Level 3 roads proposed for mixed use.

Table 3-74. Alternative 2—Noxious Weed Species and Occurrences Within 100 Feet of a Proposed NFTS Level 3, Mixed-Use Road

Species	CDFA Rating	Occurrence Number	Number of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	Number of Roads	Route intersects occurrence	Gross Acres
<i>Centaurea diffusa</i>	A	1		45N35	0.05		no	0.01
<i>Cirsium arvense</i>	B	2		45N04	0.03		no	0.01
<i>Cirsium arvense</i>	B	5		46N30	0.07		yes	0.23
<i>Isatis tinctoria</i>	B	9		43N18	0.05		no	0.01
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	3		46N30 46N63	0.72		yes yes	14.37
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	4		46N06	0.05		no	0.02

Species	CDFA Rating	Occurrence Number	Number of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	Number of Roads	Route intersects occurrence	Gross Acres
<i>Onopordum acanthium</i>	A	15		46N06	0.07		yes	0.31
<i>Onopordum acanthium</i>	A	18		46N30	0.04		yes	0.23
<i>Onopordum acanthium</i>	A	51		45N35	0.06		yes	0.16
<i>Onopordum acanthium</i>	A	54		43N36	0.04		no	0.01
<i>Centaurea solstitialis</i>	C	3		43N36	0.05		yes	0.08
Total			11		1.23	7		15.44

Under Alternative 2, a total of 313 miles of existing NFTS roads would be subject to seasonal closures during the winter and early spring months, when roads are most likely to be wet and muddy. During these months, roads can be more vulnerable to rutting and damage from motor vehicle use. Seasonal closures would reduce the total annual motor vehicle use, particularly during months when ground disturbance is more likely to create conditions ideal for noxious weed establishment. There is currently one known noxious weed occurrence within 100 feet of an NFTS road which would be closed from December 1 through April 30 under this alternative (Table 3-75). Alternative 2 would slightly reduce the risk of spreading this weed occurrence, while also slightly reducing the risk of weed introduction on 313 miles of existing NFTS roads.

Table 3-75. Alternative 2—Noxious Weed Species and Occurrences Within 100 feet of an NFTS Road with Proposed Seasonal Closures

Species	CDFA Rating	Occurrence #	# of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	# of Roads	Route intersects occurrence	Gross Acres
<i>Onopordum acanthium</i>	A	34		46B02J	0.05		yes	0.02
Total			1		0.05	1		0.02

Cumulative Effects

The cumulative effects from Forest management and use activities are the same for the Alternative 2 as for Alternative 1. For a complete discussion refer to the Alternative 1 cumulative effects section. For a complete list of present and reasonably foreseeable Forest management activities, refer to appendix H.

By limiting the number of existing routes to be added to the NFTS, travel through seven of these occurrences would be prohibited. More importantly, travel off of designated System roads would be prohibited, which would greatly reduce the risk of noxious weed introduction and spread across the Forest. In combination with the effects of other Forest uses, the Proposed Action would greatly reduce the risk of weed spread from any new infestations that might occur with timber

harvest, grazing, prescribed burning, or wildfire activities, as well as other Forest management and use activities impacting lands away from System roads. Future ground disturbing projects would also be less susceptible to the introduction of new weed propagules or to continued disturbance due to OHV use. Restriction of OHV travel cross-country would eliminate OHV disturbance off of system roads; whereas OHV disturbance favors such undesirable species as invasive exotic annual grasses, the lack of it would favor native perennial grasses and forbs and generally later-seral (late-stage ecological succession) native vegetation, which is better able to resist weed invasion (Gelbard and Harrison 2005). Under Alternative 2 a total of 16.09 miles of routes infested with known noxious weed occurrences would be added to the NFTS. These 15 known occurrences have a total area of 71.87 acres (Table 3-72). Under this alternative, a total of 5,033 roads would be open for motor vehicle use (Table 3-72).

Alternative 3

Direct and Indirect Effects: Prohibition of Cross-Country Motor Vehicle Travel and Addition of Proposed Routes

Alternative 3 prohibits cross-country travel off NFTS roads, adds no unauthorized routes to the Forest road system, and does not change seasonal use restrictions or non-street legal vehicle use restrictions on access on existing Forest System roads. Under Alternative 3, potential spread by motor vehicles from existing noxious weed occurrences within 100 feet of existing unauthorized routes (Table 4) would be eliminated. Under this alternative, motor vehicle traffic would be restricted from traveling off designated routes, which would greatly reduce the potential for creating noxious weed habitat through ground disturbance. It would also greatly reduce the potential for spread of noxious weeds from existing populations. Since no new routes would be added to the NFTS, there would be no effect from adding facilities.

Direct and Indirect Effects: Mixed Use and Seasonal Closures on NFTS Roads

No level 3 roads would be open to mixed use, so there would be no change in weed risk from mixed use relative to Alternative 1, and a lower risk from mixed use than under Alternative 2. There would be no seasonal road closures under this alternative, so the weed risk related to seasonal closures would be the same as for Alternative 1, and slightly higher than under Alternative 2. Forest Roads 46B29HB, 44N08, and 44N01 would remain open to OHVs, but there are no known noxious weed occurrences along these roads.

Cumulative Effects

The cumulative effects from Forest management and use are the same for Alternative 3 as for the No Action and Proposed Action Alternatives, and a complete discussion can be found in the Alternative 1 cumulative effects section. The additional effect from Alternative 3 from the prohibition of cross-country travel would be the same as for Alternative 2, described above. The difference in cumulative effects for Alternative 3 is that no non-system routes would be added to the Forest road system. This would eliminate vehicle travel through the 21 known noxious weed occurrences located along non-system routes. There are no known noxious weed occurrences along Forest Roads 46B29HB, 44N08, or 44N01. This alternative would therefore have the lowest risk of noxious weed introduction and spread. Under this alternative, no routes with known weed occurrences would be added to the NFTS, and the total number of roads open for motor vehicle use would be 3,866 (Table 3-72).

Alternative 4

Direct and Indirect Effects: Prohibition of Cross-Country Motor Vehicle Travel and Addition of Proposed Routes

Alternative 4 would prohibit cross-country travel off NFTS roads. It would also add 286 miles of unauthorized routes to the NFTS road system, with seasonal closures. It would also place seasonal closures on the same 312 miles of existing NFTS system roads as in Alternative 2, with additional seasonal closures on 112 miles of NFTS roads in the Warner Mountains, for a total of 424 miles of roads with seasonal closures. It would not allow mixed vehicle use on any existing Level 3 NFTS roads. Forest Roads 46B29HB, 44N08, and 44N01 would be closed to OHV use.

Table 3-76. Alternative 4—Risk Ratings for Proposed Routes

Indicator (number of unauthorized routes)	Low Risk	Medium Risk	High Risk
Known weed occurrences present			9
A-Listed weed w/in 100 ft. of route			1
No inventory or survey			1012
B- or C-listed weed w/in 100 ft. of route		3	
Surveyed ≥ 2001; no weeds found	0		
Total	0	3	1022

This alternative would add the same routes passing within 100 feet of the same noxious weed occurrences as would Alternative 2 (Table 3-65), with the exception of BA203 which passes within 100 feet of two Canada thistle infestations. Direct and indirect effects in Alternative 4 would therefore be similar, but slightly lower than those of the Alternative 2. Fewer unauthorized routes would be added when compared with Alternative 2 (286 miles vs. 339 miles, or about 84 percent of the Alternative 2 roads). This would result in a reduced risk of weed introduction and spread into these areas (Table 3-69).

Direct and Indirect Effects: Mixed Use and Seasonal Closures on NFTS Roads

No Level 3 roads would be opened to mixed use in Alternative 4, as opposed to 138 miles of Level 3 roads opened to mixed use under Alternative 2. This would result in a lower risk of noxious weed introduction and spread from mixed use of Level 3 roads than under Alternative 2, and an equal weed risk from mixed use on existing NFTS roads as for Alternative 1. Under Alternative 4, a total 1.34 miles from 12 NFTS roads in and near 15.70 acres of known weed occurrences would be closed seasonally (Table 3-70). Because this would reduce the total annual vehicle traffic through and adjacent to these weed occurrences, it would lower the overall weed risk under this alternative.

Table 3-77. Alternative 4—Noxious Weed Species and Occurrences Within 100 feet of an NFTS Road with Proposed Seasonal Closures

Species	CDFA Rating	Occurrence Number	# of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	Number of Roads	Route intersects occurrence	Gross Acres
<i>Cardaria pubescens</i>	B	2		42N31	0.06		no	0.10
<i>Centaurea diffusa</i>	A	1		45N35	0.05		no	0.01
<i>Cirsium arvense</i>	B	1		42N79	0.05		yes	0.01
<i>Cirsium</i>	B	2		45N04	0.03		no	0.01

Species	CDFR Rating	Occurrence Number	# of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	Number of Roads	Route intersects occurrence	Gross Acres
<i>arvense</i>								
<i>Cirsium arvense</i>	B	5		46N30	0.06		yes	0.23
<i>Cirsium arvense</i>	A	10		42N31	0.06		no	0.19
<i>Linaria dalmatica</i>	A	3		46N30 46N63	0.24 0.49		yes yes	5.29 9.08
<i>Linaria dalmatica</i>	A	4		46N06	0.05		no	0.02
<i>Onopordum acanthium</i>	A	15		46N06	0.10		yes	0.49
<i>Onopordum acanthium</i>	A	18		46N30	0.07		yes	0.23
<i>Onopordum acanthium</i>	A	25		42N31	0.03		no	0.01
<i>Onopordum acanthium</i>	A	34		46B02J	0.05		yes	0.02
Total			12		1.34	8		15.70

Cumulative Effects

The cumulative effects from Forest management and use activities, and from neighboring lands, are the same for Alternative 4 as for Alternatives 1 and 2. For a complete discussion, see the Alternative 1 cumulative effects section. The additional effects from Alternative 4 would be similar to the effects of Alternative 2. The only difference would be a slightly reduced risk of introduction and spread of noxious weeds due to the reduced number of proposed routes to be added to the Forest road system and the increase in the number of seasonal closures. Under this alternative, a total of 14.19 miles of routes known to be infested with noxious weeds would be added to the NFTS. The total of 13 known weed occurrences within 100 feet of these proposed routes have a total area of 71.62 acres (Table 3-79). Under this alternative, a total of 4,888 roads would be open for motor vehicle use (Table 3-79).

Alternative 5

Direct and Indirect Effects: Prohibition of Cross-Country Motor Vehicle Travel and Addition of Proposed Routes

Alternative 5 is very similar to the Proposed Action. It would add 339 miles of unauthorized routes, with seasonal closures on 312 miles of roads during two seasons rather than four seasons. It would also allow mixed use on 4,291 miles of NFTS roads, 392 miles more than in Alternative 2. The direct, indirect, and cumulative effects of Alternative 5 on noxious weeds are predicted to be slightly higher than those of Alternative 2, due to the slight reduction in length of seasonal closures and the increased number of mixed-use level 3 NFTS roads.

This alternative would add the same routes passing within 100 feet of the same noxious weed occurrences as would Alternative 2 (Table 3-65). Direct and indirect effects from the prohibition of cross-country travel and addition of proposed routes in Alternative 5 would therefore be

similar to those of Alternative 2. As with all of the action alternatives, the prohibition of cross-country travel would provide a reduction in weed risk relative to Alternative 1.

Direct and Indirect Effects: Mixed Use and Seasonal Closures on NFTS Roads

The proposed mileage of NFTS roads with seasonal closures would be identical to that of Alternative 2, although the seasons of closure would be reduced. This difference would potentially create a minimal increase in weed risk relative to Alternative 2. Alternative 5 would allow mixed use on an additional 531 miles of existing NFTS roads, as opposed to 138 miles under Alternative 2. These mixed use roads pass near or through a total 53.48 acres of known noxious weed occurrences along 5.74 miles of roads (Table 3-78). Overall, the direct and indirect effects and weed risk of mixed use and seasonal closures on NFTS roads under Alternative 5 would be slightly greater relative to Alternative 2.

Table 3-78. Alternative 5—Noxious Weed Species and Occurrences Within 100 feet of a Proposed NFTS Level 3, Mixed-use Road

Species	C DFA Rating	Occurrence Number	Number of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	# of Roads	Route intersects occurrence	Gross Acres
<i>Cardaria pubescens</i>	B	2		42N31	0.06		no	0.10
<i>Carduus nutans</i>	A	1		40N27	0.05		no	0.01
<i>Carduus nutans</i>	A	3		41N44	0.07		no	0.32
<i>Carduus nutans</i>	A	BV4		40N27	0.05		no	0.02
<i>Carduus nutans</i>	A	DH4		45N09	0.09		yes	0.88
<i>Carduus nutans</i>	A	5		44N11	0.06		yes	0.19
<i>Carduus nutans</i>	A	11		40N27	0.05		yes	0.02
<i>Centaurea diffusa</i>	A	1		45N35	0.05		no	0.01
<i>Centaurea diffusa</i>	A	4		41N11	0.12		yes	1.57
<i>Centaurea solstitialis</i>	C	3		43N36	0.05		yes	0.08
<i>Cirsium arvense</i>	B	1		42N79	0.05		yes	0.01
<i>Cirsium arvense</i>	B	2		45N04	0.03		no	0.01
<i>Cirsium arvense</i>	B	5		46N30	0.07		yes	0.23
<i>Cirsium</i>	B	10		42N31	0.07		no	0.19

Species	CDFA Rating	Occurrence Number	Number of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	# of Roads	Route intersects occurrence	Gross Acres
<i>arvense</i>								
<i>Crupina vulgaris</i>	A	1		40N22	0.17		yes	2.36
				40N33	1.08		yes	19.20
<i>Hypericum perforatum</i>	C	1		38N54	0.02		no	<0.01
<i>Hypericum perforatum</i>	C	2		41N11	0.05		yes	0.01
<i>Hypericum perforatum</i>	C	3		40N33	0.04		no	0.02
<i>Isatis tinctoria</i>	B	4		40N22	0.01		yes	0.05
<i>Isatis tinctoria</i>	B	5		48N70	0.05		no	0.01
<i>Isatis tinctoria</i>	B	BV6		40N22	0.01		no	0.04
<i>Isatis tinctoria</i>	B	DH6		48N70	0.05		no	0.01
<i>Isatis tinctoria</i>	B	7		48N70	0.10		yes	0.28
<i>Isatis tinctoria</i>	B	9		43N18	0.05		no	0.01
<i>Isatis tinctoria</i>	B	11		40N41	0.05		no	0.01
<i>Isatis tinctoria</i>	B	18		44N02	0.05		no	0.01
<i>Isatis tinctoria</i>	B	19		40N22	0.02		yes	0.05
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	1		42N03	0.05		no	0.05
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	2		42N68	0.19		yes	3.50
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	BV3		42N68	0.04		no	0.11
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	WM3		46N30	0.24		yes	5.29
				46N63	0.49		yes	9.08
<i>Linaria</i>	A	BV4		42N68	0.04		no	0.06

Species	C DFA Rating	Occurrence Number	Number of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	# of Roads	Route intersects occurrence	Gross Acres
<i>dalmatica</i> ssp. <i>dalmatica</i>								
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	A	WM4		46N06	0.05		no	0.02
<i>Onopordum acanthium</i>	A	15		46N06	0.49		yes	0.10
<i>Onopordum acanthium</i>	A	18		46N30	0.07		yes	0.23
<i>Onopordum acanthium</i>	A	23		38N54	0.05		no	0.01
<i>Onopordum acanthium</i>	A	24		38N54	0.02		no	0.02
<i>Onopordum acanthium</i>	A	WM25		42N31	0.03		no	0.01
<i>Onopordum acanthium</i>	A	BV25		38N54	0.04		no	0.01
<i>Onopordum acanthium</i>	A	40		44N77	0.06		yes	0.21
<i>Onopordum acanthium</i>	A	51		45N35	0.06		yes	0.16
<i>Onopordum acanthium</i>	A	54		43N36	0.04		no	0.01
<i>Onopordum acanthium</i>	A	56		38N54	0.05		no	0.01
<i>Onopordum acanthium</i>	A	102		38N54	0.05		no	0.02
<i>Onopordum acanthium</i>	A	117		39N50	<0.01		no	<0.01
<i>Onopordum acanthium</i>	A	146		40N33	0.04		yes	0.02
<i>Onopordum acanthium</i>	A	151		39N50	0.05		yes	0.03
<i>Onopordum acanthium</i>	A	153		39N50	0.06		yes	0.09
<i>Onopordum acanthium</i>	A	170		41N47	0.06		yes	0.09
<i>Onopordum acanthium</i>	A	198		42N68	0.05		no	0.04
<i>Onopordum acanthium</i>	A	219		38N47	0.01		no	<0.01

Species	CDFA Rating	Occurrence Number	Number of Occurrences	Proposed Mixed Use Road(s)	Miles within 100 ft. of Weeds	# of Roads	Route intersects occurrence	Gross Acres
<i>Onopordum acanthium</i>	A	296		39N50	0.04		no	0.01
<i>Onopordum acanthium</i>	A	298		38N54	0.05		no	0.02
<i>Salvia aethiopsis</i>	B	1		41N11	0.10		yes	0.61
<i>Salvia aethiopsis</i>	B	6		40N37	0.04		no	0.01
<i>Salvia aethiopsis</i>	B	18		41N44	0.03		yes	0.18
<i>Salvia aethiopsis</i>	B	19		41N44	0.87		yes	7.57
<i>Salvia aethiopsis</i>	B	20		41N44	0.05		yes	0.01
Total			26		5.74	8		53.48

Cumulative Effects

The cumulative effects from Forest management and use activities, and from neighboring lands, are the same for Alternative 5 as for Alternatives 1 through 4. For a complete discussion, see the Alternative 1 cumulative effects section. The additional effects from Alternative 5 would be similar to the effects of Alternative 2. The only difference would be a slightly increased risk of introduction and spread of noxious weeds due to the reduction in seasonal closures on the Forest road system and the increased number of NFTS level 3 roads open to mixed use. Under this alternative, a total of 16.09 miles of routes known to be infested with noxious weeds would be added to the NFTS. The total of 15 known weed occurrences within 100 feet of these proposed routes have a total area of 71.87 acres (Table 3-79). Under this alternative, a total of 5,033 roads would be open for motor vehicle use (Table 3-79).

Table 3-79. Summary of Effects Measures for all Alternatives

Effects Measure	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Miles of Infested Routes ¹	28.78	16.09	0	14.19	16.09
Number of Weed Infestations ¹	21	15	0	13	15
Acres of Weed Infestations ¹	73.1	71.87	0	71.62	71.87
Number of Routes & Roads with Seasonal Closures	0	213	0	270	213
Acres of Weed Infestations-Seasonal Closures ²	0	0.02	0	15.70	0.02
Miles of Infested Routes-Seasonal Closures ²	0	0.05	0	1.34	0.05

Effects Measure	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Number of Closure Dates	0	4	0	5	2
Miles of Roads Open to Mixed Use	3,764	3,899	3,764	3,761	4,292
Acres of Weed Infestations-Mixed Use ³	0	15.44	0	0	53.48
Miles of Infested Routes-Mixed Use ³	0	1.23	0	0	5.74
Total Number of Roads Open to Motorized Use	5,508	5,033	3,866	4,888	5,033

¹ Calculated from known noxious weed infestations within 100 feet of proposed routes.

² Calculated from known noxious weed infestations within 100 feet of NFTS roads with seasonal closures.

³ Calculated from known noxious weed infestations within 100 feet of Level 3 NFTS roads proposed for mixed use.

Summary of Effects Analysis Across all Alternatives

In summary, the lowest weed risk alternative is Alternative 3 (Table 3-80), which prohibits cross-country motor vehicle travel and adds no unauthorized routes to the Forest road system. The highest weed risk alternative is Alternative 1, which allows continued cross-country travel throughout the Forest, except in the South Warner Wilderness Area. Alternatives 2, 4, and 5 vary only slightly in their weed risks, since the greatest contributing factor in the risk analysis is cross-country travel, which is prohibited under all of these alternatives.

Table 3-80. Risk Analysis for all Alternatives

Indicator – Noxious Weeds	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Risk of weed spread	1	3	5	4	2

In the table above, a score of 5 indicates that the alternative poses the least risk for noxious weed spread. A score of 1 indicates that the alternative poses the greatest risk for noxious weed spread.

Compliance with the Forest Plan and Other Direction

Alternative 1 does not prohibit cross-country travel and carries a high risk of noxious weed spread and introduction. This alternative is inconsistent with Forest Service Manual direction (FSM 2081.03) which requires the identification of noxious weed control measures when there is a moderate to high risk of introducing or spreading noxious weeds. For the reasons discussed above in the effects analysis of Alternative 1 upon noxious weeds, a moderate to high risk exists, due to the unmanaged disturbance and increased potential for new weed introductions as a result of continued cross-country travel.

All action alternatives are consistent with the Modoc NF Land and Resource Management Plan. A noxious weed risk assessment has been completed for each alternative (FSM 2081.03 and SNFPA 2004), the public has been informed of the risk and effects from motor vehicle travel and noxious weeds (SNFPA 2004), and under some of the alternatives, noxious weed control measures (*i.e.*, route closure or restricted access) have been identified in areas of high risk (FSM 2081.03).