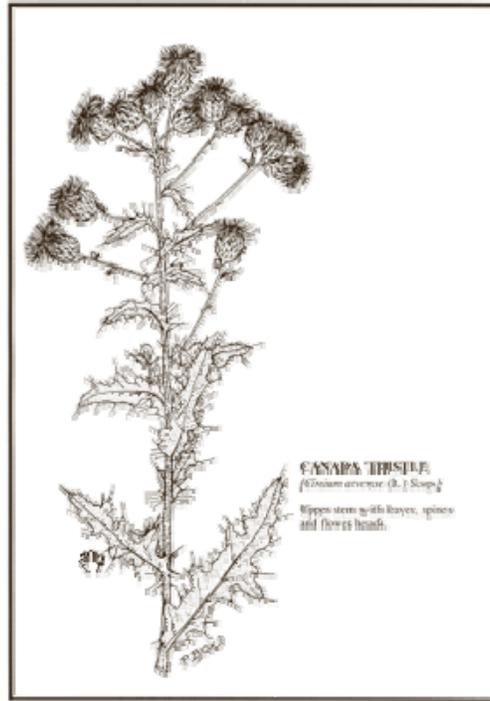


# Appendix C

## Noxious Weed Risk Assessment

### Sugarberry Project

Prepared for:  
USDA Forest Service  
Plumas National Forest  
Feather River Ranger District



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## INTRODUCTION

This Noxious Weed Risk Assessment has been prepared to evaluate the effect of the Sugarberry project on California Department of Food and Agriculture (CDFA) listed noxious weeds and other invasive non-native plant species. This assessment is in compliance with the Plumas National Forest Land and Resource Management Plan (USDA Forest Service 1988), the Herger-Feinstein Quincy Library Group Forest Recovery Act Final Environmental Impact Statement (USDA Forest Service 1999), the Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement Record of Decision (USDA Forest Service 2001), and the direction in the Forest Service Manual section 2080, Noxious Weed Management (amendment effective since 11/29/95) (USDA Forest Service 1991), which includes a policy statement calling for a risk assessment for noxious weeds to be completed for every project. The overriding principle stated in these documents is that "...it is much cheaper to prevent an infestation from becoming established than to try to eliminate it once it has begun to spread, or deal with the effects of a degraded plant community." Specifically, the manual states:

2081.03 - Policy. When any ground disturbing action or activity is proposed, determine the risk of introducing or spreading noxious weeds associated with the proposed action.

1. For projects having moderate to high risk of introducing or spreading noxious weeds, the project decision document must identify noxious weed control measures that must be undertaken during project implementation.
2. Use contract and permit clauses to prevent the introduction or spread of noxious weeds by contractors and permittees. For example, where determined to be appropriate, use clauses requiring contractors or permittees to clean their equipment prior to entering National Forest System lands.

2081.2 - Prevention and Control Measures. Determine the factors that favor the establishment and spread of noxious weeds and design management practices or prescriptions to reduce the risk of infestation or spread of noxious weeds.

Where funds and other resources do not permit undertaking all desired measures, address and schedule noxious weed prevention and control in the following order:

1. First Priority: Prevent the introduction of new invaders,
2. Second Priority: Conduct early treatment of new infestations, and
3. Third Priority: Contain and control established infestations.

**Noxious Weed Management:** The ROD's for the HFQLGFRA FEIS and the SNFPA amend the management direction in the LRMP for the Plumas NF to address management of noxious weed and invasive exotic weeds (page 2-9 of the HFQLGFEIS and pages 30-31 of Appendix A of the ROD for SNFPA). The noxious weed management standards and guidelines in Appendix A state that a noxious weed risk assessment needs to be conducted to determine the risks for weed spread associated with different types of proposed management activities. A risk assessment was conducted for the HFQLGFEIS and resulted in the following amended direction. Table 2.4 of the HFQLGFEIS states:

Manage National Forest system lands so that management activities do not introduce or spread noxious or invasive exotic weeds using the following guidelines during site-specific planning and implementation:

**Inventory:** As part of site-specific planning, inventory project areas and adjacent areas (particularly access roads) for noxious and invasive exotic weeds.

**Control:** If noxious weeds are found in or adjacent to a site-specific project area, evaluate treatment options relative to the risk of weed spread without treatment. Evaluate control methods at the site-specific planning level.

**Prevention/Cleaning:** Require off-road equipment and vehicles (both Forest Service owned and contracted) used for project implementation to be weed-free. Clean equipment and vehicles of all attached mud, dirt and plant parts. Use standard timber sale contract clause C6.343-Cleaning of Equipment in timber sale contracts.

**Prevention/Road Construction:** Require all earth-moving equipment, gravel, fill or other materials to be weed-free. Use onsite sand, gravel, rock or organic matter, where possible. Evaluate road locations for weed risk factors.

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**Prevention/Revegetation:** Use weed-free equipment, mulches, and seed sources. Avoid seeding in areas where revegetation will occur naturally, unless noxious weeds are a concern. Save topsoil from disturbance and put it back to use in onsite revegetation, unless contaminated with noxious weeds.

**Prevention/Staging Areas:** Do not stage equipment, materials, or crews in noxious weed infested areas where there is risk of spread to areas of low infestation.

## PROJECT DESCRIPTION

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### 1. INVENTORY

Floristic Botanical Surveys were conducted in proposed treatment units in 2004, 05, and 06 by USFS Botanists and TEAMS, a USFS Enterprise Team. Roadside noxious weed surveys were conducted in conjunction with unit surveys during the same time period by the respective surveyors.

The analysis area discussed in this risk assessment in the Sugarberry project encompassing approximately 48,000 acres and access routes into the project. Within the analysis area there are approximately 319 miles of roads with an average road density of 4.24 mile road/ square mile (Hydrology CWE Analysis). This is greater than the forest average of 3.0 miles of road per square mile of land. These roads vary from two-lane, paved surface material to impassible dirt trails.

#### Inventory summary

*Adequate noxious weed surveys have been completed within the project area.*

### 2. KNOWN NOXIOUS WEEDS & CONTROL MEASURES

Table 1 summarizes known noxious weed occurrences from the analysis area. No California Department of Food and Agriculture A or B-rated noxious weeds were found **within** treatment units. However, one A-rated (rush skeleton weed) and two B-rated weeds (Canada thistle and broad-leaved pepper weed) are located within the analysis area. The California Department of Food and Agriculture's noxious weed list ([http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo\\_list-pestrating.htm](http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo_list-pestrating.htm)) divides noxious weeds into categories A, B, and C. A-listed weeds are those for which eradication or containment is required at the state or county level. With B-listed weeds, eradication or containment is at the discretion of the County Agricultural Commissioner. C-listed weeds require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner.

Rush skeleton weed (*Chondrilla juncea*) is located along the Slate Creek Road on private and federal land. This infestation is adjacent to harvest unit 140. This unit will be dropped from consideration due to the presence of this species and the potential to spread the infestation. This infestation has been pulled for the past three years prior to seed dispersal. The area of infestation will be excluded from project activity and designated as a "Controlled Area". Also, there will be no vehicle staging in the vicinity.

Broad-leaved pepper weed (*Lepidium latifolium*) is an aggressive invader of riparian areas. It can form a monoculture, which excludes native riparian vegetation. *L. latifolium* forms deep underground reproductive structures that make eradication difficult. Once established, it is extremely difficult to control. It was located on private land adjacent to Slate Creek. The nearest treatment unit is approximately 1 mile to the south/ west of the small *L. latifolium* infestation. Plants were hand pulled and removed from the site at the time of their discovery in 2006. The property owner shall be contacted and encouraged to eradicate the infestation.

Canada thistle (*Cirsium arvense*) is common throughout northern California, including the Sierra Nevada, Modoc Plateau, Central Valley, and Coast Range (Bossard 2000). However, it is uncommon on the Feather River Ranger District; this is the first documented occurrence on this district. This occurrence is located approximately 100 feet west of unit 614 and north of the Winner Spur A road. Approximately 75 stems were pulled in 2006. Plants will be retreated with hand-pulling until they are eradicated.

Two common weeds found within the project area are Klamathweed (*Hypericum perforatum*) and bull thistle (*Cirsium vulgare*). Klamathweed can be found along most Forest Service roads on the Plumas National Forest that

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are not shaded by overstory canopy. Plants are usually scattered within the road prism, rarely forming dense stands or invading the adjacent forest. Plant distribution appears to be most heavily concentrated at the lower elevations (1000-4000 ft), with plants becoming less common at the higher elevations. The Klamathweed beetle (*Chrysolina quadrigemina*) is a very effective biocontrol agent, which keeps overall Klamathweed populations low (Borror 1992).

Bull thistle was probably introduced in North America during colonial times. It is naturalized and widespread throughout North America and is found on every other continent except Antarctica (Bossard, 2000). It is most common in disturbed areas with little to no canopy and, like Klamathweed, is often found along roads with little shade cover. It is common along most Forest Service roads on the Plumas National Forest, although on the Feather River Ranger District it does not normally form dense thickets. Although not native, bull thistle plants provide forage for many native insect species. Butterflies and bees are frequently observed on these plants; electronic images of insect activity on bull thistle inflorescences are available by contacting Chris Christofferson, Assistant botanist, Feather River Ranger District, Plumas National Forest. Furthermore, bull thistle does not spread by rhizomes or other creeping roots and does not produce allelopathic chemicals like some other A and B rated noxious weeds (Bossard 2000). Two biocontrol insects (*Urophora stylata* and *Rhinocyllus conicus*) have been released and help reduce population levels.

There will be no control measures for bull thistle or Klamathweed.

Common Name	Species	Total Infestation area (ft <sup>2</sup> )	Infestation area (ft <sup>2</sup> ) in treatment units
Broadleaved pepperweed	<i>Lepidium latifolium</i>	3400	0
Bull thistle	<i>Cirsium vulgare</i>	Common	Common
Canada thistle	<i>Cirsium arvense</i>	150	0
Klamathweed	<i>Hypericum perforatum</i>	Common	Common
Skeleton weed	<i>Chondrilla juncea</i>	45000	0
Yellow starthistle	<i>Centaurea solstitialis</i>	300	0

Table 1 Known noxious weeds within treatment units and within analysis area.

**Known Noxious Weeds Summary**

*Due to the presence of three high priority species within close proximity to the proposed project area there is a MODERATE risk from known species.*

**3. CURRENT HABITAT VULNERABILITY**

Vulnerability to noxious weed invasion and establishment is greatly influenced by plant cover, soil cover, and overstory shade. Areas become more susceptible to noxious weed invasion when these components are removed. Wildland fire and logging are sources of disturbance that can greatly alter vulnerability to noxious weed invasion. However, once the native vegetation reestablishes, the conditions that favor noxious weed establishment are no longer present.

There are numerous past, current and future timber sales on private land within the analysis area. These activities increase the overall vulnerability of the area to noxious weed invasion. Within treatment units the existing canopy cover is relatively high, appreciably exceeding 40% in most stands in the project area.

### **Current Habitat Vulnerability Summary**

*Due to a high level of canopy cover and ground cover, the current vulnerability to noxious weed invasion is LOW within treatment units. However when the landscape as a whole is considered the relative risk increases due to the high concentration of roads and logging operations on private land. Consequently the overall habitat vulnerability is MODERATE*

### **4. NON-PROJECT DEPENDENT VECTORS**

Non-project dependent weed vectors include; roads, recreational activities including camping, hiking, horseback riding, and hunting. The areas at greatest risk in this proposed project area are those located next to roads. Roads provide dispersal of exotic species via three mechanisms: providing habitat by altering conditions, making invasion more likely by stressing or removing native species, and allowing easier movement by wild or human vectors. There are approximately 319 miles of roads within the project area. There are an additional 47 miles of user-created OHV routes. Due to the low number of OHV routes in the project area there is a low potential impact from OHV weed spread. We are currently conducting district wide inventories to determine the impacts of OHV use on noxious weeds.

### **Non-Project Dependent Vectors Summary**

*These factors contribute to a MODERATE risk of noxious weed invasion.*

### **5. HABITAT ALTERATION EXPECTED AS A RESULT OF PROJECT**

#### **Group Selection Timber Harvest:**

Approximately 1000 acres of group selection are planned with this project. These groups range in size from ½ to 2 acres and average about 1½ acres. Groups will receive the following treatments:

**Harvest** – Trees will be mechanically removed. There are no canopy cover restrictions. However, for this type of group selection harvest, the maximum diameter of trees (including hardwoods) removed would be less than 30" dbh, except that larger trees may be removed on an incidental basis to allow operability.

**Site Preparation** - Underburning, machine piling and burning, or hand piling and burning would be used to treat residual slash, pre-existing fuels, and shrubs in group selection openings. In stands scheduled for mastication or stands that would not receive any secondary treatment, handlines would be constructed around machine piles and hand piles to prevent fire escape. Handlines would not be constructed around groups that would have an underburn follow-up treatment.

**Reforestation** - In group selection openings, a combination of natural and artificial regeneration would be used to achieve desired *stocking levels* of new stands dominated by shade-intolerant species (e.g., ponderosa pine, Jeffrey pine, sugar pine).

**Release** – Treatments that occur after tree planting for the control of vegetation that is competing with planted and natural regeneration, including noxious weeds that are present or have re-invaded the area after site preparation treatments. To be effective, release treatments need to remove vegetation for a five-foot radius around each tree. Release work should be timed and coordinated with fire management staff to reduce burn intensities and improve plantation survival.

#### **Individual Tree Selection (ITS):**

Approximately 150 acres will be treated with ITS. Trees will be mechanically removed.

#### **DFPZ Construction**

DFPZs will be constructed through the following prescriptions:

**Underburn:** Approximately 650 acres. Prescribed burns are designed to reduce excess live and dead vegetation and move the area towards the desired fuel condition. This type of burning is initiated when fuel moistures are low enough to carry fire and still be within prescription parameters. Firelines constructed by hand would be scraped to mineral soil to a minimum of two feet and vegetation cleared to a minimum width of six feet. Dead fuel would be scattered away from the mineral soil scrape to reduce fireline intensities. Machine

lines, constructed with mechanized equipment, would be scraped to mineral soil a minimum of six feet and vegetation cleared to a minimum of ten feet.

Underburning in the mixed coniferous forest associated with the Sugarberry project should not create environmental conditions favorable to noxious weed invasion. The prescribed underburns will occur in the spring or fall when fuel moisture levels, temperature, and humidity are favorable for a low intensity burns that will not completely remove the duff layer nor remove the canopy.

Data suggest the degree of fire-induced disturbance is an important factor in post fire noxious weed invasion. According to Crawford (cited in Keeley 2001), studies of high and low intensity burns showed that noxious weed invasion is favored when fire intensity is sufficient to open the canopy and destroy the litter layer. Also, Brooks *et al* (citing Keeley *et al* in preparation) explains how recent studies throughout the southern Sierra Nevada have shown cheatgrass (*Bromus tectorum*) invasions to be the most predictable in forest patches that were burned with high intensity. He explains that such impacts could be potentially more profound now due to unnaturally high fuel loads. A goal of this project is to reduce the unnaturally high fuel loads that will support a high intensity wildfire that would result in favorable conditions to noxious weed invasion. Furthermore, it has been shown that treatments that reduce surface fuels such as prescribed fire can have a profound reduction on fire intensity and can be effective for up to 10 years post treatment (Omi et al. 2006).

**Mastication:** Approximately 1100 acres. Masticate woody shrubs/trees with mechanical ground based equipment. Masticate trees less than 10" diameter breast height (dbh) unless needed for proper spacing, and masticate shrubs. Most trees masticated would be less than 6" dbh. Spacing of residual conifers would range from 18 feet ( $\pm 25\%$ ) in smaller tree size aggregations to approximately 25 feet ( $\pm 25\%$ ) in larger tree size aggregations. This would allow retention of the healthiest, largest, and tallest conifers and avoid creating openings.

Mastication will result in very little ground disturbance. Depending on surface fuel loading, masticators create a mulch layer <1 – 6 inches thick. Consequently, mineral soil will not be exposed. This will help prevent the establishment of noxious species that require mineral soil to become established.

**Mechanized thinning and biomass removal followed by underburning:** Thinning would occur from below to remove ladder and canopy fuels to increase ground to crown height, spacing between trees and spacing between tree crowns.

Soil disturbance associated with mechanized thinning and fire-line construction may create conditions that favor the establishment of early seral i.e. pioneer species. Many noxious weeds are adapted to such environments. Also, many native species such as *Lupinus* spp., *Ceanothus* spp., *Clarkia* spp., and many grasses readily establish in disturbed areas. Consequently, the creation of a disturbed area does not necessarily translate into the creation of habitat that will only be populated noxious weeds.

A second important element in noxious species establishment is sunlight. Keeley (2001) explains that most alien species are highly intolerant of shading. Shaded fuel breaks will maintain approximately 40% canopy cover. This will help prevent the establishment of many invasive species that require high levels of sunlight.

**Grapple piling and pile burning:** This could occur in areas of group selection and ITS. Disturbance associated with grapple piling will expose bare mineral soil creating a favorable environment for noxious weed establishment. Also, pile burning will likely super heat and sterilize soil beneath the pile. This will create conditions favorable to noxious weed establishment. These sites will also support native early seral species.

**Manual hand cut trees and shrubs, pile and burn piles:** Hand thin trees and shrubs, pile and burn. There will be minimal disturbance associated with manually treating the vegetation in these units. As described above, pile burning will create a disturbance which will create favorable habitat for noxious weed invasion.

**Hand thinning and piling within Riparian Habitat Conservation Areas (RHCA's):** Hand-thinning would be used in certain RHCAs where mechanical equipment is excluded. In such areas, conifers from 3' in height to 6" in diameter would be hand-thinned to a spacing of 15'. All hardwoods and riparian vegetation would be retained. Wherever possible, hand piles would be located away from riparian vegetation to prevent scorching.

### **Habitat Alteration Summary**

*These activities will disturb soil and remove overstory shade, creating environmental conditions favorable to noxious weed invasion. In addition to noxious weeds, native early seral species will be favored by timber harvest activities. The combined effect of the proposed action dependant factors will result in a MODERATE risk to noxious weed invasion.*

## **6. INCREASED VECTORS AS A RESULT OF PROJECT IMPLEMENTATION**

### **Road Reconstruction / Improvement**

Reconstruction would consist of brushing, blading the road surface, improving drainage, and replacing/upgrading culverts where needed. About 26 miles of system road would be reconstructed (action alternatives), about 13 miles of new temporary spurs would be built, and about 0.5 miles of new road construction. Additionally, 5 miles of road will be decommissioned at the completion of the project and another 9 miles of road will be allowed to close through brush and other vegetation. This project will result in a net decrease of approximately 14 miles of road.

### **Increased Vectors Summary**

*There is a MODERATE risk of noxious weed invasion due to the building of temporary roads, road maintenance, and a short-term increase in vehicular traffic. However the closure of approximately 14 miles of road will reduce the long term risk of noxious weed invasion through vectors.*

## **7. RECOMMENDED STANDARD MANAGEMENT REQUIREMENTS (SMRs)**

The SMRs are based on the priorities established in FSM 2081.2 which states “where funds and other resources do not permit undertaking all desired measures, address and schedule noxious weed prevention and control in the following order:

1. First Priority: Prevent the introduction of new invaders,
  2. Second Priority: Conduct early treatment of new infestations, and
  3. Third Priority: Contain and control established infestations.
- 
1. Prevention/Cleaning: Require all off-road equipment and vehicles (Forest Service and contracted) used for project implementation to be weed-free. Clean all equipment and vehicles of all attached mud, dirt and plant parts. This will be done at a vehicle washing station or steam cleaning facility before the equipment and vehicles enter the project area. Cleaning is not required for vehicles that will stay on the roadway. Also, all off-road equipment must be cleaned prior to leaving areas infested with noxious weeds.
  2. Prevention/Road Construction, Reconstruction, and Maintenance: All earth-moving equipment, gravel, fill, or other materials need to be weed free. Use onsite sand, gravel, rock or organic matter where possible.
  3. Prevention/Revegetation: Use weed-free equipment, mulches, and seed sources. Avoid seeding in areas where revegetation will occur naturally, unless noxious weeds are a concern. Save topsoil from disturbance and put it back to use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting will need to use only locally collected native seed sources. Plant and seed material should be collected from as close to the project area as possible, from within the same watershed and at a similar elevation whenever possible. Persistent non-natives such as timothy, orchardgrass, or ryegrass will be avoided. This will implement the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining “the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems”.
  4. Prevention/Staging Areas: Do not stage equipment, materials, or crews in noxious weed infested areas where there is a risk of spread to areas of low infestation.
  5. Small infestations identified during project implementation will be evaluated and hand treated or “flagged and avoided” according to the species present and project constraints. If larger infestations are identified after implementation, they should be isolated and avoided with equipment (and equipment washed as in # 1 above).

**8. ANTICIPATED WEED RESPONSE TO PROPOSED ACTION**

<b>Factors</b>	<b>Variation</b>	<b>Risk</b>
<b>NON-PROPOSED ACTION DEPENDENT FACTORS</b>		
1. Inventory	Adequate	Low risk
2. Known Noxious Weeds	High priority species known from areas adjacent to project area.	Moderate risk
3. Habitat vulnerability	High cover, low disturbance	Moderate current vulnerability
4. Non-project dependent vectors	Moderate current vectors	Moderate current vulnerability
<b>PROPOSED ACTION DEPENDENT FACTORS</b>		
5. Habitat alteration expected as a result of project.	Moderate ground disturbance.	Moderate risk
6. Increased vectors as a result of project implementation	Temporary roads, short-term traffic increase	Moderate risk
7. Mitigation measures	If no mitigation measures implemented	Higher risk
	If some mitigation measures implemented	Moderately reduced risk
	If all mitigation measures implemented	Greatly reduced risk
8. Anticipated weed response to proposed action	No high risk factors	Low potential for weed spread as a result of project implementation
9. Cost estimates	<b>See Below</b>	Generally, it is more economical and efficient to treat small infestations than to wait until they are too large.

**9. COSTS**

Noxious weeds significantly reduce the value of public lands. Noxious weeds negatively impact timber production, grazing, wildlife habitat, and recreational opportunities. Furthermore, noxious weed control is expensive and time consuming. Prevention and control of small infestations can reduce these impacts and reduce expenditures in the long run. Thus, noxious weed surveys, control of small infestations, and prevention measures are vital in reducing overall impacts and costs from noxious weeds.

There are approximately two acres of noxious weeds located in the project area that will be controlled primarily through hand pulling and bagging but other integrated tactics will be utilized where appropriate. This will take approximately one week of GS 5 at a rate of \$13.83/ hour. For a total of \$550.00

**10. NOXIOUS WEED CONTROL and PREVENTION MEASURES**

The following prevention measures will be implemented on the Feather River Ranger District.

## Sugarberry Project Final Noxious Weed Risk Assessment

1. Clean all ground disturbing equipment, such as masticators, harvesters, and other off-road equipment before entering National Forest System land.
2. Use weed free fill and mulch.
3. Avoid staging equipment on or immediately adjacent to any of the identified noxious weed sites.
4. Within mechanical treatment units, exclude all equipment from known infestations. A 25 foot "No Equipment" buffer will be placed around infestations. These areas will be identified on project maps and on the ground with day-glow orange noxious weed flagging.
5. Pull known infestation on Canada thistle.
6. No Staging of equipment adjacent to rush skeleton weed.

### SUMMARY

The Plumas National Forest is dedicated to the use of integrated management control tactics to control and eradicate noxious infestations in this project area. Botanical surveys have adequately examined treatment units. Noxious weed infestations have been mapped with GPS and data are managed with the use of GIS. Manual control activities began in 2003 and are ongoing. During the planning phase of this project, the Botany staff has worked in collaboration with the Silviculture, Fire, and Fuels groups to design this project with noxious weed concerns in mind. As a result the above listed criteria are part of the project design. While this project will create some conditions favorable to noxious weed invasion in limited areas, it will also facilitate the treatment of known A and B-rated weed infestations and reduce overall fuel loads and catastrophic fire potential. A catastrophic wildfire could create conditions that would favor a broad scale infestation that would be difficult and expensive to control. Omi (2006) reports that fire severity is the primary predictor of species composition immediately after a fire; with high intensity fires create conditions most ideal to opportunistic, non-native species. This project will reduce the threat of catastrophic wildfires, and may promote the establishment of native species that have coevolved with frequent low-intensity fires in this region of the Sierra Nevada Mountains.

In the absence of the noxious weed control measures listed above, there is a **MODERATE** overall risk of noxious weed establishment as a result of the proposed Sugarberry project. This determination is based on the following:

1. Low numbers of high priority species of concern on the Plumas National Forest,
2. Adequate mapping of noxious species,
3. Ongoing control and mapping of noxious species in project area,
4. Maintenance of over-story shade in the DFPZ,
5. Maintenance of duff layer in the DFPZ,
6. Low intensity underburns,
7. Removal of canopy and duff layer in group selection units.

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