

## Noxious Weeds

Noxious weed species known to occur in the Sugar Pine project area are: bull thistle (*Cirsium vulgare*), foxglove (*Digitalis purpurea*), klamathweed (*Hypericum perforatum*), oxeye daisy (*Leucanthemum vulgare*), perennial sweet pea (*Lathyrus latifolius*), and Spanish broom (*Spartium junceum*). Other species that occur in the general vicinity and along roads leading to the project area are: yellow starthistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea maculosa*), and medusahead (*Taeniatherum caput-medusae*).

**Bull thistle** is a biennial herb native to Eurasia that can grow to heights of 2 meters (Hickman 1993). It is fairly common in California, though less so at higher elevations or more pristine sites in the Sierra National Forest. Large plants can produce over 100,000 seeds (Randall 2000). Bull thistle tends to spread rapidly in disturbed meadows and in areas where soil disturbance favors weeds such as logged areas or areas cleared for fuels reduction (Randall 2000). There are over 300 infestations of bull thistle mapped within the Sierra National Forest, ranging from a few stems to infestations of several acres. There are 9 infestations within the Sugar Pine project area, mostly confined to roadsides and other disturbed areas such as old landings. Hand removal of plants within the project area occurred in 2007 and 2008, and will be conducted again in 2009 and into the future until infestations are eradicated.

**Foxglove** is a tall biennial herb native to Europe and Africa, originally introduced as an ornamental that tends to invade wet areas and streamsides. The plants are toxic to livestock and wildlife and can form monocultures in riparian areas to the exclusion of the native vegetation (Harris 2000). There is at least one small population of foxglove in the project area, possibly more along streamsides.

**Klamathweed** is a rhizomatous perennial native to Europe. Plants can form dense patches that eventually replace native plants and can cause severe problems for conifer regeneration (CDFA 2009). Spread is by seed and vegetative growth underground (CDFA 2009). Plants produce an average of 15,000 to 33,000 seeds, which can remain viable for up to 10 years and are spread by a variety of vectors, including tires and heavy equipment (CDFA 2009). There are over 100 infestations of klamathweed in the Sierra National Forest with several along roads leading to the Sugar Pine project area, and this is one of the fastest-spreading weeds in the Forest. One infestation of klamathweed was documented and hand-pulled in the project area in 2008.

**Oxeye daisy** is a rhizomatous perennial herb that has escaped cultivation in many areas of the West. Its potential for spread at high elevations is of concern. The oxeye daisy is native to Europe. It displaces native plants in wildlands. When infestations are not controlled early, they form large seedbanks of seeds that can remain viable for 20 years. Reproduction is by seed and by underground spread via the rhizomes (Alvarez 2000). There is a cluster of oxeye daisy along road 5S17, which is rumored to have originated from a large infestation on a nearby private parcel. Hand-pulling began in 2008 and will continue in 2009.

**Perennial sweet pea** is a perennial, sprawling, herb that has escaped cultivation and can form large masses that exclude native vegetation. There is at least one small infestation in the project area that should be easy to eliminate.

**Spanish broom** is an invasive shrub that is native to the southern Mediterranean region, originally introduced to California as an ornamental in the 1800s (Nilsen 2000). Shrubs spread in wildlands, excluding native plants and posing a fire hazard. There is a dense infestation of Spanish broom just south of Tenaya Lodge in the northwest portion of the project area within units proposed for fuels reduction activities. This area will be flagged for avoidance to ensure that seeds are not spread during project implementation.

## Alternative 1 – No Action

Under the No Action alternative, current management plans would continue to guide activities in the project area. This includes all ongoing activities with existing decisions or permits that would not be changed if this alternative were selected including: underburning, plantation maintenance, cattle grazing, recreation, and recreation residences. Known sites for botanical resources would continue to be managed to maintain present diversity of the species as specified in the LRMP (USDA-FS 2001a) and SNFPA ROD (USDA-FS 2004).

### Direct Effects

No direct effects would occur to threatened, endangered, or Forest Service sensitive plants if the no action alternative is chosen because project activities would not take place.

### Indirect and Cumulative Effects

Indirect and cumulative effects have the potential to occur to TES plants under the no action alternative primarily from the increased potential for uncontrolled wildland fire. Uncontrolled wildfire has the potential to cause significant disturbance to soil, ground cover and canopy cover, placing Forest Service sensitive riparian species at risk. For example, lady's slipper orchid populations could be extirpated if the canopy and soil organic layers were incinerated under extreme fire conditions (Kaye and Cramer 2005). The veined water-lichen population could be extirpated if the extreme heat prevailed for long enough to kill the thalli (plants) within the stream reach containing the lichens.

Except for under the most severe of fire conditions, which would kill all the seeds in the soil, the short-leafed hulsea would probably survive and perhaps ultimately benefit from wildfire as it tends to thrive along roadsides and in post-burn conditions (e.g. the Big Creek fire in 1994 resulted in vigorous recovery of short-leafed hulsea near Huntington Lake).

Uncontrolled wildland fire also introduces a higher potential for the spread of weeds through suppression actions. Fires can also allow the opportunity for the introduction and spread of invasive non-native weeds when seeds or contaminated soil area introduced, which can affect Forest Service sensitive species through competition for resources. However, the overall risk is probably about the same as under the action alternatives.

## Alternative 2 – Proposed Action

### Direct Effects

The following direct effects to sensitive plants are possible as a result of timber harvest or fuels reduction activities: Direct killing of plants when equipment runs over them or parks on them, when logs are skidded or dragged over them, when slash piles block their light, and when piles are burned directly over them and the heat intensity is too great to survive. Mastication could directly kill plants by running them over or by covering them with a dense layer of chipped wood and limbs.

### Indirect Effects

A possible indirect effect to sensitive plants is the degradation or loss of habitat resulting from the introduction or spread of noxious or invasive weeds. Noxious weeds are plant species that can spread rapidly and compete with native plants for water and other resources, in some cases forming solid stands of plants that may crowd out sensitive plant species. Noxious weeds can be transported by vehicles and heavy equipment when equipment passes through or excavates soil in contaminated areas and carries weed seeds to new areas. Risk of noxious weed introduction and

spread can be greatly reduced by power washing all heavy equipment before bringing it onto the project site, as recommended by the Forest Service “Guide to Noxious Weed Prevention Practices (USDA-FS 2001b).” Noxious weed prevention measures have been incorporated into the design of this project, thus these indirect effects should be minimal.

### Mountain lady’s slipper orchid – *Cypripedium montanum*

Eight populations of lady’s slipper orchids were discovered within the project area. Most are well within the riparian conservation zone and the streamside management zone (see aquatic design measures). Reducing canopy cover below 60% is thought to be damaging to lady’s slipper orchids. Populations are often very small and isolated from each other; therefore, concerns exist related to population size, genetic fitness and the overall viability of the species (Kaye and Cramer 2005). However, in the past 5 years, at least 15 new populations have been found in the Sierra National Forest, varying in size from a few stems to more than a hundred bringing the total number of known populations up to 24 within the Sierra NF.

The eight known populations are well-protected from detrimental changes in canopy cover or soil parameters because they occur next to streams or are flagged for avoidance such that canopy cover will not be reduced and heavy equipment will not be allowed. If any new occurrences of lady’s slipper orchids were to be discovered in the future they would be protected as follows (plants do not emerge every year therefore one year of surveying may not reveal all populations that are present): Any new populations would have a zone flagged around them where no timber harvest or heavy equipment would be allowed within approximately 60 feet (average tree height in the area). The buffer was determined to be sufficient to ensure that canopy cover remains at 60% or higher within the populations. Populations would also be monitored post-project to ensure that these measures were followed and to evaluate the status of the populations. The project design measures are expected to prevent any negative direct or indirect effects to the mountain lady’s slipper orchids.

### Subalpine fireweed – *Epilobium howellii*

Because meadow habitat will be protected by the project design measures for aquatic species (see EIS), and because the only population of subalpine fireweed occurs outside the project by at least 1000 feet, there will be no direct or indirect effects to this species.

### Short-leaved hulsea – *Hulsea brevifolia*

Because any short-leaved hulsea populations will be flagged for avoidance prior to project implementation, there will be no direct or indirect effects to this species.

### Veined water lichen - *Peltigera hydrotheria*

One new veined water lichen population was found during field surveys for the Sugar Pine Adaptive Management project, and more may exist in areas not directly surveyed (not every mile of perennial stream was surveyed). As this species is sensitive to water pollution and prefers cold clear water, any activities that alter water quality or raise water temperature could negatively impact plants and habitat. Because of the project design measures for RCAs prohibiting ground-disturbing activities within 100 feet of perennial streams, no negative effects are expected. In addition, stream temperatures will not rise as a result of the project because canopy cover will not change significantly near streams.

## Cumulative Effects

The geographic boundaries delineated for surveys and subsequent effects analysis were defined by the boundaries of the Sugar Pine Adaptive Management Project area since this is where the proposed activities with potential effects on plant species are to occur. Table 3, on page 25 is a

listing of past, present and reasonably foreseeable future activity within the project area utilized in determining cumulative effects on plant species.

This project and the subsequent maintenance and further vegetation work will move the areas treated closer to the pre-European natural range of variability for the area, except for possibly the areas where non-native annual grasses become more common after clearing.

Foreseeable future activity within the project area may include prescribed burning, ongoing vegetation maintenance by handwork or possibly heavy equipment, management of the plantations (thinning), and road maintenance. Other activities likely to occur include personal fuel woodcutting, recreational uses such as hiking, bike riding, OHV and dirt bike use, and dispersed camping.

Because suitable habitats for TES plants will be avoided and noxious weed mitigations will be implemented, negative effects to any undiscovered sensitive plants are expected to be minimal to non-existent for the Sugar Pine Adaptive Management Project, and therefore should not add to any cumulative effects of activities in the project area on sensitive plants.

### **Alternative 3**

#### **Direct, Indirect and Cumulative Effects**

Effects for rare plants and noxious weeds would be the same as Alternative 2.

### **Alternative 4**

#### **Direct, Indirect and Cumulative Effects**

Effects for rare plants and noxious weeds would be the same as Alternative 2.

