

**Bald Fire Salvage and Restoration Project
Invasive Plant Species Risk Assessment
Hat Creek Ranger District
Lassen National Forest
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Introduction

When a ground-disturbing action or activity is proposed, an Invasive Plant Species Risk Assessment (IPSRA) determines the risk of introducing or spreading invasive plants associated with the proposed action. This Risk Assessment is a guide for evaluating risks and explains the components, variations and risks (high, moderate, and low), which make up this risk assessment.

Non-Proposed Action Dependent Factors

1) Inventory:

The Bald Project is located within the Ladder (MA #5) Management Area in the Lassen National Forest Land and Resources Management Plan (LRMP 1993) and encompasses approximately 31,324 acres. The Bald Project treatment area is approximately 14,363 acres of the total fire-affected area. The fire-affected area has been surveyed in the past for various projects; however, the majority of the fire-affected area has not been surveyed in recent years (Table 1). Invasive plant surveys were done in conjunction with rare plant surveys for these projects. In addition to the project surveys listed in Table 1, invasive plant surveys were conducted along forest system roads within the fire-affected area in June, 2015.

Table 1: Past Surveys Conducted in the Bald Project area

Project	Survey Year
Balderdash	1991
Beaver Creek Design (EM)	1994
Beaver Creek Underburn	1997
Beaver Creek Wetlands	1992
Blacks Ridge	2000

Project	Survey Year
Boothill Biomass	1993
Boothill Thinning	1997
Duke Thin	1995
Eastside Salvage	2004
Eastside Underburn	2010
Gulch Salvage	1996
HC Grazing Permit Exchange	1994
HC Wildlife Enhancement	1996
Ladder Brush	2003
Mr. Wilson T.S.	1990
North Coble	2001
OHV Route Designation	2009
Pittville	2000
Pittville Hwy Brushfield	1992
Procter Thinning	1992
Reservoir 8	1992
Roadside Hazard Tree Salvage	2004
Sheepy Brushfields	1992
Waterhole 6	1992
Waterhole 9	1992
Wilson Insect Salvage	1993
Wilting Insect Salvage	1993

Source: USDA Forest Service 2014

2) Known Invasive plants:

The California Department of Food and Agriculture’s noxious weeds list (CDFA 2015) divides invasive plants into categories A, B, and C. A-listed weeds are those for which eradication or containment is required at the state or county level. For 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. There are currently seven California Department of Food and Agriculture (CDFA) listed invasive plant species within the fire-affected area. Bull thistle (*Cirsium vulgare*), Klamathweed (*Hypericum perforatum* ssp. *perforatum*), medusahead (*Elymus caput-medusae*) and yellow starthistle (*Centaurea solstitialis*) are all CDFA C-rated species, Dyer’s woad (*Isatis tinctoria*) is a CDFA B-rated species and Scotch thistle (*Onopordum acanthium* ssp. *acanthium*) and spotted knapweed (*Centaurea stoebe* var. *micranthos*) are both CDFA A-rated species. Table 2 shows the Lassen National Forest (LNF) invasive plant occurrences that are located within Bald Project proposed treatment units. Table 3 displays other occurrences of these species found within the fire-affected area, some of which are located along access roads that may be used during project implementation but are outside of any proposed treatment units. In addition to the invasive plants located within the project boundary, there are three invasive plant species that occur within the water draft sites which will be used for dust abatement activities. These invasive plants include Klamathweed (*Hypericum perforatum* ssp. *perforatum*), whitetop (*Cardaria* sp.) and yellow starthistle (*Centaurea solstitialis*), all of which are CDFA C-rated species. Klamathweed and yellow starthistle occur at the

Bidwell Pond draft site and whitetop is known from the Halls Flat site, this whitetop occurrence is treated annually by the LNF Botany Program. All of these occurrences at the draft sites would be treated by forest botany staff prior to project implementation.

Table 2. LNF Invasive Plant Occurrences within Bald Project Treatment Units.

Common & Scientific Name	Occurrence #	Location	Project Unit
bull thistle (<i>Cirsium vulgare</i>)	N/A	Scattered across fire-affected area, in small numbers, at disturbed sites.	N/A
Dyer's woad (<i>Isatis tinctoria</i>)	LNF #4	Ladder Butte cinder pit; partially along 34N82.	Hazard Tree
Klamathweed (<i>Hypericum perforatum</i> ssp. <i>perforatum</i>)	LNF #117	Adjacent to railroad near junction of 34N10 and 34N82, 2 miles S of Jellico.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #1	Several infestations along 35N14 near Coble Spring & near junction of 35N14 & 35N11.	803 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #5	Several infestations along 35N10, ½ mile W of Beaver Creek Pasture.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #13	Several infestations along 35N01 & 35N60, 1.75 miles N of Sheep Flat.	826 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #23	Several infestations along 35N61 & adjacent to railroad grade, ½ mile N & W of Wilson Spring.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #24	Several infestations along & in vicinity of 35N10 near Gibbs Spring.	141, 143 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #25	Junction of 35N12 & 35N63 near Willow Spring.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #32	Several infestations within & adjacent to Sheep Flat & along 35N11 & 35N11E.	139, 825 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #60A	Junction of 35N13 & 36N05, near Moon Spring.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #60F	Along 36N05 at W edge of project boundary.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #61	Several infestations along 35N22, ½ mile S of Moon Spring.	801 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #62	Several infestations along 35N60, ½ mile NE of Willow Spring.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #65	Ladder Butte cinder pit.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #76	Adjacent to 35N13, ¾ mile NW of Negro Camp.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #82	Several infestations along 34N11, 1.25 miles W of Ladder Butte.	132, 165 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #141	Several infestations along 34N29 near Negro Camp.	913 & Hazard Tree

Common & Scientific Name	Occurrence #	Location	Project Unit
medusahead (<i>Elymus caput-medusae</i>)	LNF #145	Several infestations along & near 35N11 & 35N11G, south end of Sheep Flat.	804 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #155	Several infestations along 35N12 & 35N12A, 1.5 miles S of Willow Spring.	103, 834 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #156	W of 34N35, at Butte Camp (site).	843
medusahead (<i>Elymus caput-medusae</i>)	LNF #183	Several infestations near the junction of 35N10 & 34N82, 2 miles S of Jellico.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #185	Along 35N18B, ½ mile NE of Sheep Flat.	503 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #187	Along 35N14 in Negro Camp Gulch.	810, 808 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #188	Along 35N10, 1 mile N of Ladder Butte.	840, 841 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #189	Two infestations along 35N60, 2 miles NE of Sheep Flat.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #190	Along 35N13, ¾ mile W of Negro Camp Gulch.	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #191	S of 35N49, 2 miles E of Sheep Flat.	131, 151 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #192	Along 35N12, 1 mile E of Jellico.	103 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #193	Two infestations near junction of 35N70 & Pittville Road, 1 mile S of Jellico.	837 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #194	Along 35N10 at W edge of Project Boundary	Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #195	Two infestations along 35N66, 2 miles E of Sheep Flat.	830 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #196	Two infestations along 35N50, 1 mile E of Sheep Flat	826, 827 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #197	Junction of 35N12 & 35N70, ¼ mile E of Jellico.	102, 837 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #198	Along 35N42, ¾ mile N of Sheep Flat.	823 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #199	Along 35N43, 1.75 miles ENE of Sheep Flat.	829 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #200	Three infestations along 35N42Y, 1/3 mile E of Coble Mountain.	502, 821 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #201	Along 35N69, ½ mile SW of Willow Spring.	830 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #203	Several infestations along 35N61, 1 mile W of Mud Spring.	106, 147, 149 & Hazard Tree

Common & Scientific Name	Occurrence #	Location	Project Unit
medusahead (<i>Elymus caput-medusae</i>)	LNF #204	Between 35N37Y & 35N37YA, 1.5 miles NE of Sheep Flat.	826 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #205	Along 34N29, ¼ mile S of Negro Camp Spring.	126, 164, 841 & Hazard Tree
medusahead (<i>Elymus caput-medusae</i>)	LNF #206	Three infestations along Pittville Hwy, 1 mile NE of Sheep Flat.	826 & Hazard Tree
Scotch thistle (<i>Onopordum acanthium</i> ssp. <i>acanthium</i>)	LNF #59	W of 35N10, ½ mile N of Beaver Creek Pasture.	Hazard Tree
Scotch thistle (<i>Onopordum acanthium</i> ssp. <i>acanthium</i>)	LNF #60	Between the railroad grade & 34N82, just S of 35N10.	Hazard Tree
spotted knapweed (<i>Centaurea stoebe</i> ssp. <i>micranthos</i>)	LNF #21A	Along 34N82 near the Ladder Butte cinder pit.	Hazard Tree
spotted knapweed (<i>Centaurea stoebe</i> ssp. <i>micranthos</i>)	LNF #21B	Ladder Butte cinder pit.	Hazard Tree
yellow starthistle (<i>Centaurea solstitialis</i>)	LNF #142	Several infestations along 35N10 (22 Rd) from Negro Gulch to S of Negro Camp Spring.	112, 123, 126, 159, 808, 810, 814-816 & Hazard Tree

Table 3. LNF Invasive Plant Occurrences in the Bald Project area, not within Treatment Units.

Common & Scientific Name	Occurrence	Location
Bull thistle (<i>Cirsium vulgare</i>)	None Assigned	scattered across fire-affected area, in small numbers at disturbed sites.
medusahead (<i>Elymus caput-medusae</i>)	LNF #60B	On private land along 35N13 at Moon Spring.
medusahead (<i>Elymus caput-medusae</i>)	LNF #153	N end of Beaver Creek Reservoir, on earthen dam.
Scotch thistle (<i>Onopordum acanthium</i> ssp. <i>acanthium</i>)	LNF #21	Ladder Butte cinder pit.

3) Habitat Vulnerability:

The Bald Project is situated on the Hat Creek Rim and extends across Colby Mountain, Ladder Butte, Negro Camp Mountain and Beaver Creek on the Hat Creek Ranger District of the LNF. The predominant habitat within the fire-affected area is eastside pine with inclusions of low sagebrush flats, shrub fields, springs with associated wet meadow habitat, juniper flats and pine plantations. Sections of Beaver Creek are perennial and there are seasonally flowing streams scattered across the fire-affected area. Overall, the most common conifers are Jeffrey and ponderosa pine, white fir, Incense cedar and western juniper, with a smaller component of sugar pine, lodgepole and gray pine. Hardwoods include California black oak, white oak and aspen. The understory vegetation components include greenleaf manzanita, Mahala mat, antelope bitterbrush, big sagebrush, serviceberry, gooseberry, snowberry and forbs and graminoid species

such as yarrow, larkspur, wavyleaf Indian paintbrush, Idaho fescue, Sandberg's bluegrass, threadleaf sedge and slenderbeak sedge. Elevations range from approximately 4,100 to 5,800 feet.

Of the 31,324 acres of LNF lands that were affected by the Bald Fire, burn severity varied across the landscape resulting in large expanses with complete tree mortality and other areas that still support a green tree component. Approximately 18,080 acres burned at a very high intensity, 3,510 acres burned under a moderately high intensity and 9,520 acres burned at a low to moderate intensity (Bald Project Record). The disturbed soils, removal of surface vegetation and duff, and reduction in overstory cover in these areas has rendered this habitat vulnerable to invasive plant establishment and proliferation. The fire-affected area has also experienced ground disturbance over time from routine road construction and maintenance activities, timber harvest operations, pine plantation establishment and maintenance, livestock grazing, prescribed fires and previous wildland fires. Overall, due to the considerable reduction in overstory canopy cover and understory vegetation and duff, as well as past disturbances in the fire-affected area, there is a high risk for invasive plant introduction and spread from current habitat vulnerability.

4) Non-Project-Dependent Vectors:

Vehicle traffic, road maintenance equipment and livestock are the most important non-project-dependent vectors of invasive plants in the fire-affected area. There are 131 miles of roads within the fire-affected area, including the Pittville Highway (Lassen County road 111) which is heavily used by the public and Forest Service personnel; in addition, this road is a main haul route for private timber companies with inholdings near the fire-affected area. There are many known invasive plant occurrences along these road shoulders which may be carried into currently un-infested areas. Vehicles may translocate seeds and other propagules in mud that affixes to tires, and thus function as vectors for invasive plant spread. Routine road maintenance activities may also contribute to invasive plant spread if heavy equipment were to bring in off-forest weed seeds and/or propagules, and this equipment may operate through known invasive plant sites along roads within the forest and carry them into other areas. Furthermore, following the demobilization of fire suppression squads, portions of the fire-affected area have been utilized by the public for fuelwood cutting. It is common practice to drive off road in order to retrieve cut firewood, which increases the potential for invasive plant spread of roadside occurrences into native plant communities.

There are four grazing allotments within the fire-affected area that were active until livestock were threatened by the Bald Fire. Livestock grazing can pose an increased risk of invasive plant introduction and establishment; however, Forest Service management direction stipulates that following natural fires, grazing will be deferred for two growing seasons or until desired vegetation conditions are established (LRMP 1993, Bald Project Range Report). Desired vegetative conditions means all rangelands are in satisfactory or better ecological condition with stable or upward trends. Therefore, the risk of invasive plant spread by livestock would be delayed, which should help prevent the proliferation of invasive plants into areas that currently have little to no ground cover.

Wildlife can serve as non-project vectors, posing a small additional risk for the spread of invasive plants. Overall, there is a moderate vulnerability from non-project dependant vectors, mainly due to non-project related activity along roads within the fire-affected area.

Proposed Action-Dependent Factors

5) Habitat Alteration Expected as a Result of Project:

The Bald Project would implement hazard tree removal on approximately 4,815 acres, salvage harvest on approximately 3,632 acres, area fuels treatments on approximately 5,499 acres and reforestation on approximately 417 acres outside of hazard tree, salvage and fuels treatment units. Some areas would receive various combinations of treatments. The total footprint of treatments on national forest lands under the proposed action would be approximately 14,363 acres. While no new permanent road construction is proposed, up to 1 mile of temporary roads would be constructed for implementation and then decommissioned. In addition, approximately 2.2 miles of non-system roads would be used for project implementation and added to the LNF transportation system as Maintenance Level (ML) 2 roads. These non-system roads are currently in sufficient condition to be used for project activities, requiring no additional construction, resurfacing or repair. Existing roads would be repaired and maintained to facilitate the removal of salvage material, fuels treatments and reforestation activities.

Surface fuel loads created during harvest would be treated using either mechanical piling or hand piling; most of these piles would be burned. In addition to the 417 acres of reforestation units, native conifers would be planted within the salvage harvest and fuels treatments to expedite reforestation within these burned areas. Site preparation for reforestation would be completed through harvest and surface fuel treatments. No soil preparation, such as soil ripping, would occur.

These project activities are expected to marginally increase current habitat vulnerability, since much of the tree canopy in these areas was already lost in the Bald Fire. The proposed action would alter the existing habitat by removing standing dead trees that provide some remaining shade, and by disturbing the soil further through temporary road construction and mechanical timber harvest activities. Site preparation for reforestation would create patches of disturbed soils as biomass is harvested in preparation for replanting with native conifers.

Overall, the potential risk of invasive plant introduction and establishment from project-related habitat alteration is moderate, due to shade reduction and soil disturbance which would augment the level of habitat alteration that has already occurred as a result of the Bald Fire.

6) Increased Vectors as a Result of Project Implementation:

The Bald Project has the potential to increase the risk of invasive plant spread by creating new vectors for the introduction and establishment of invasive species or increasing the probability that existing vectors would bring invasive plants into the fire-affected area. System roads within the fire-affected area would receive increased traffic from project-related activities and the use of mechanical ground-based equipment may serve as vectors for invasive plant spread as seeds or propagules affix to mud on vehicle tires and equipment. There are several known invasive plant occurrences along roads and within native plant

communities across the fire-affected area that are at risk of spreading further. Given that the majority of the fire-affected area has not been surveyed in recent years and several new infestations have been located along roads following the Bald Fire incident, there is a high likelihood that currently unknown invasive plant occurrences exist within non-forested openings across the Bald Project area. During project implementation, equipment washing is expected to be prevalent in order to minimize the spread of invasive plants across the fire-affected area. However, equipment washing may only prevent the spread of invasive plants between treatment units; therefore, currently unknown invasive plant occurrences could increase in size or spread to other areas within the same treatment unit. In addition, approximately 2.2 miles of existing non-system routes would be used for project implementation and added to the LNF transportation system following project completion. The addition of these roads to the forest transportation system would provide new opportunities for invasive plant spread within the fire-affected area from vehicles and road maintenance equipment. In addition, up to one mile of temporary roads would be constructed for project implementation; however, these roads would be decommissioned after use, reducing the risk for the establishment of invasive plants within the fire-affected area. There are three invasive plant occurrences located within the project water drafting sites. There is a risk that these plants may be transported into the fire-affected area by water tending trucks which would be used in dust abatement efforts; however, these occurrences would be treated by forest botany staff prior to implementation which would reduce the risk of transport of these species. Overall, the movement of mechanical equipment through the fire-affected area during salvage harvest, fuels treatments, hazard tree removal and reforestation activities combined with the addition of non-system routes to the forest road system, the large number of known invasive plant infestations along roads and the potential for unknown infestations to occur within treatment units poses a high potential risk of transporting invasive plant seeds and propagules.

7) Integrated Design Features:

The following Design Integrated Features (IDFs) implemented as part of the proposed action would greatly reduce the risk factors described in this document.

1. Staging of equipment would be done in weed free areas.
2. Known invasive plant infestations would be identified, flagged where possible, and mapped for this project. Locations would be displayed on contract maps. Identified invasive plant sites within or adjacent to the fire-affected area containing isolated patches with small plant numbers would be treated (hand pulled or dug) by forest botany staff prior to project implementation. Any larger or unpullable infestations would be avoided by harvesting equipment, or equipment used would be washed on site before leaving the infested area and entering un-infested areas to prevent spreading invasive plants within the fire-affected area.
3. New small infestations identified during project implementation would be evaluated and treated according to the species present and project constraints and avoided by project activities. If larger infestations are identified during implementation, they would be isolated and avoided by

equipment, or equipment used would be washed on site before leaving the infested area and entering un-infested areas.

4. Hazard trees would be hand felled and left in place where they occur within invasive plant infestations.
5. Post-project monitoring for implementation and effectiveness of weed treatments and control of new infestations would be conducted as soon as possible and for a period of multiple years following project completion.
6. If project implementation calls for mulches or fill, they would be certified weed-free. Seed mixes used for re-vegetation of disturbed sites would consist of locally adapted native plant materials to the extent practicable.

8) Anticipated Invasive Plant Response to Proposed Action:

Presently there are numerous invasive plant infestations that are known to occur along forest system roads within the Bald Project area. Existing conditions within the fire-affected area are largely defined by the effects of wildfire, which removed canopy cover, understory vegetation and duff, resulting in a high risk for invasive plant spread related to habitat vulnerability. There is a moderate risk due to non-project vectors and project level habitat alteration and a high risk from increased vectors as a result of project implementation. Integrated Design Features such as equipment cleaning, treatment of new infestations and post-project monitoring would ensure that invasive plant introduction and establishment within the fire-affected area is minimized. Overall, with the incorporation of Integrated Design Features as part of the Proposed Action, there is a high potential for weed spread with the implementation of the Bald Fire Salvage and Reforestation Project (Table 4).

Table 4: Summary of the Bald Project Invasive Plant Species Risk Assessment

<i>Non-proposed action-dependent factors</i>	
Inventory	Incomplete
Known Invasive Plants	Two high-priority species present; one moderate-priority species present; four low-priority species present; prevention of spread within the fire-affected area high priority
Habitat vulnerability	High current vulnerability
Non-project-dependent vectors	Moderate current vulnerability
<i>Proposed action-dependent factors</i>	
Habitat alteration expected as a result of project	Moderate risk
Increased vectors as a result of project implementation	High risk
Integrated Design Features	Reduced risk
<i>Anticipated Weed Response to the Proposed Action</i>	High potential for weed spread

9) Costs:

Invasive plants can greatly reduce the value of public lands through negative impacts to timber production, grazing, wildlife habitat and recreational opportunities. Furthermore, invasive plant control is expensive and time-consuming. Prevention and control of small infestations can minimize these impacts and reduce long-term expenditures. Invasive plant surveys, control of small infestations and post-project monitoring are all vital to reducing overall impacts and costs from invasive plants.

10) References

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