



United States Department of Agriculture  
Forest Service

# **Grasshopper Restoration Project**

## **Invasive Species Report**

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## 1.0 Introduction

This report addresses the invasive plant species that are within or adjacent to the general project area. The report will inform an invasive species risk rating and effects analysis for the activities proposed by . Alternative 1 (the Proposed Action) and Alternative 2 (also called the Shelterwood Alternative). This project is in compliance with and incorporates by reference the Mt. Hood National Forest Land and Resource Management Plan, as amended by the Northwest Forest Plan guidance regarding invasive species management. The harvesting activities would create disturbed conditions conducive for invasive species growth, and activities have potential to introduce new species to the area. PDC and mitigations are proposed to minimize the risk of invasive species spread.

## 2.0 – Analysis Framework

### 2.1 – Resource Indicators and Measures

An invasive species is defined as a species that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Federal agencies have been directed to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. To achieve this goal, agencies should identify those actions they take that may affect the status of invasive species, take positive steps within their authorities to prevent the introduction of invasive species and prevent the spread of existing invasive species, provide for the control of invasive species, and minimize the economic, ecological, and human health impacts that invasive species cause.

Invasive plants can inhabit and negatively alter native plant communities and ecosystems. Aggressive invasions may cause long-lasting management problems. These species can displace native vegetation, increase fire hazards, reduce the quality of recreational experiences, poison livestock, alter nutrient dynamics, increase soil erosion and replace both wildlife and livestock forage. By simplifying complex plant communities, weeds reduce biological diversity and threaten rare habitats. The predators and diseases that control these plant species in their native habitats are not present in the habitats where they have been introduced. Unchecked by predators or disease, such plants may become invasive and dominate a site, displacing native plants and altering a site's biological and ecological integrity.

Specific invasive plant management direction for Region 6 is found in the 2005 Record of Decision (ROD) for Preventing and Managing Invasive Plants (USDA 2005) as well as the ROD for the Final Environmental Impact Statement (FEIS) for Site-Specific Invasive Plant Treatments for the Mt. Hood National Forest and Columbia River Gorge National Scenic Area (March 2008) (USDA 2008). Both of these documents amended the Mt. Hood National Forest Plan (1990). The 2008 FEIS provides more site-specific guidance for managing invasive plants on this forest and provides NEPA for the treatment of invasive weeds with herbicides. The management direction

includes invasive plant prevention and treatment/restoration standards intended to help achieve desired future conditions, goals, and objectives, and is expected to result in decreased rates of spread of invasive plants while protecting human health and the environment from the adverse effects of invasive plant treatment. The specific treatment of invasive weeds is covered under this previous NEPA analysis and will not be discussed in detail within this report.

The Oregon State Weed Board maintains a list of target invasive species that are considered a high priority for the state. These species are termed “noxious weeds” and are defined as “exotic, non-indigenous, species that are injurious to public health, agriculture, recreation, wildlife or any public or private property” (ODA 2019). The terms invasive and noxious are not interchangeable. Noxious weeds are identified by the Oregon Department of Agriculture (ODA) and the Oregon State Weed Board. For the purposes of this report, the term invasive species will be used, since this analysis includes species not listed by the State but which are of concern to the Mt. Hood National Forest. The species listed below are known to occur within or adjacent to the project area. For a complete list of Oregon noxious weeds see Appendix 1.

**Table 1. Oregon State Weed Board Noxious weeds present within or adjacent to the planning area**

Common Name	Scientific Name	Designation <sup>1</sup>
Broom, Scotch	<i>Cytisus scoparius</i>	B
Knapweed, diffuse	<i>Centaurea diffusa</i>	B
Knapweed, spotted	<i>Centaurea stoebe (C. maculosa)</i>	B,T
Medusahead rye	<i>Taeniatherum caput-medusae</i>	B
St. Johnswort	<i>Hypericum perforatum</i>	B
Thistle, bull	<i>Cirsium vulgare</i>	B
Thistle, Canada	<i>Cirsium arvense</i>	B
Ventenata grass	<i>Ventenata dubia</i>	B

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<sup>1</sup> Noxious weeds, for the purpose of this system, shall be listed as either A or B, and may also be designated as T, which are priority targets for control, as directed by the Oregon State Weed Board.

- A Listed Weed: A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent. Recommended action: Infestations are subject to eradication or intensive control when and where found.\
- B Listed Weed: A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties. Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

T Designated Weed (T): A designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T designated noxious weeds are determined by the Oregon State Weed Board and directs ODA to develop and implement a statewide management plan. T designated noxious weeds are species selected from either the A or B list.

In addition to noxious weeds, which are designated by the State, there are other non-native plants of concern in this area that are not designated as "noxious" but are invasive in disturbed or natural areas (Table 2). Efforts to proactively remove these plants where found will reduce the risk of infestation and eventual noxious weed listing. These species will be discussed where deemed appropriate.

**Table 2. Additional non-native plant species of concern present within or adjacent to the planning area**

Common Name	Scientific Name
Birdsfoot trefoil	<i>Lotus corniculatus</i>
Bulbous bluegrass	<i>Poa bulbosa</i>
Cheatgrass	<i>Bromus tectorum</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>

## 2.2 - Methodology

The sites of known infestations for invasive species are recorded in the Natural Resource Manager Threatened, Endangered and Sensitive Species – Invasive Species Database (USDA 2019). This database is used to record sites and treatment information. This information was used to determine known populations of invasive species within this project area. In addition, surveys of roadways within and accessing the project area were conducted during the 2019 field season to determine current conditions and high-risk areas. Intuitive-control surveys within units were also conducted. Surveys determined which species were present, the level of infestation and the vectors for weed dispersal. This information was then used to determine the likely risk associated with the proposed activities.

## 3.0 – Invasive Species Conditions

### 3.1 – Existing Condition

This project area has been subject to past disturbances and has multiple resource uses today. It has a history of timber removal, targeted species planting, wildfires and wildfire suppression. The area is visited for recreational use along trails, hunting and other resource use. There are minimal infestations of invasive species within this project area. These populations are limited to roadways or trails within the area. There are limited weeds present within the proposed treatment units.

#### 3.1.1 – Knapweed Species

Diffuse and spotted knapweed are the primary invasive species of concern in this project area. There are only sparse infestations of these weeds within the project area. Herbicide treatments within this area in the past have reduced the presence of knapweed. Traffic along these roads and ground disturbance as well as the presence of other vectors makes the spread of these plants from other sources very likely.

Knapweed plants displace native vegetation, alter surface water run-off and sediment yield, and can form dense populations (Sheley 1998). All knapweed species are highly competitive invaders of disturbed areas. Studies have also isolated a chemical compound in knapweed species (Fletcher 1963) that inhibits the growth of other plants (allelopathy) (Kelsey 1987). This may give knapweed a competitive edge over native plants.

Knapweed primarily spread through seed dispersal. A single knapweed plant can produce an average of 1000 seeds and the seeds can remain dormant but viable in the soil for over 8 years (Davis 1993), which makes these weeds very difficult to control. Treatments must be conducted on an annual basis to prevent further spread of the species as the seed bank germinates. The seeds are windblown but tend to travel only a short distance. These seeds may also be transported by wildlife and livestock, which may browse knapweed species and ingest the seeds (Davis 1993) (Wallander 1995). Seeds are primarily transported to new areas in mud, soil or debris on vehicle tread, machinery, and boot tread. Mature plants may break off and become attached to the undercarriage of vehicles and equipment (Watson 1974). Knapweed seeds may be spread through rivers and other waterways, and may also be a contaminant in commercial mulch, hay, straw, seed or rock products.

### 3.1.2 – Annual Invasive Grasses

There are currently limited populations of invasive annual grasses within the project area. Adjacent to the project area there are populations of medusahead rye, cheatgrass and North African wiregrass within forested stands historically disturbed by timber harvest and grazing. The spread of these grass species into dry, open stands has been well documented in literature and will not be discussed in-depth in this report. Changing climates and disturbance regimes have resulted in a regional spread of invasive grass species (D'Antonio 1992). The conversion of native understory forbs and grasses to these non-native grass species has resulted in changed fuel loading and fire behavior (Fusco 2019).

### 3.1.3 – St. Johnswort

St. Johnswort is present sporadically throughout the roadways of this project area. This species is widely distributed across the Forest along road shoulders, in rock storage areas, quarries, and other areas of soil disturbance. It grows from a long vertical taproot and forms extensive lateral roots from which new buds may develop. This extensive root system and budding following disturbance makes St. Johnswort difficult to control with herbicides. This weed also has toxic properties with effects to grazing wildlife or livestock (Marsh 1930), making this plant a concern in rangeland habitats. The seed capsules which form from the showy yellow flowers are sticky. Each plant may produce an average of 15,000 to 34,000 seeds (Winston 2012) and these seeds may remain viable for several years (Tisdale 1959). Biological control insects are well established on this species (Coombs 2004) and are the primary means of control on the Forest, however, this biocontrol is not as effective east of the Cascades, and more work needs to be done to determine a management strategy. The somewhat sticky St. Johnswort seeds can be dispersed

by rodents, livestock, vehicles and machinery. It may also be a contaminant in commercial mulch, hay, straw, seed or rock products.

#### 3.1.4 – Other species

There are other invasive weed species occurring within or adjacent to the project area. These are smaller, isolated populations typically associated with roadsides. Oxeye daisy appears along roadsides in conjunction with knapweed or St. Johnswort. Thistles are limited within the project area. There are isolated populations broom along the roadways outside of the project area, but this species was not found within the project area. These species all have the potential for spread or infestation within the project area.

### 3.2 –Environmental Consequences for Invasive Species

#### 3.2.1 – Effects of No Action

The No Action alternative would have no direct risk for non-native species introduction. Under this alternative, none of the thinning or connected actions (such as temporary roads) would take place. The forest stands within the project area would remain as described above. There are potential indirect effects to these species as a result of no action. Stands with dense growth will continue to experience reduced plant diversity. This could also affect suitable habitats. The dense growth of the trees in much of this area results from a lack of natural disturbance and from human fire suppression. As such, there is a high risk of a catastrophic wildfire occurring within this area. Please see the fuels report which is incorporated by reference for more information on this risk. If a high intensity fire were to burn through this system, many areas would be returned to early-seral stand conditions, which can promote the growth of invasive weed species, further reducing the diversity and ecological function of this area.

#### 3.2.2 - Direct and Indirect Effects of Alternative 1 and Alternative 2

This report analyzes both Alternative 1 (the Proposed Action) and Alternative 2 (also called the Shelterwood Alternative). The vast majority of activities proposed by Alternative 1 and Alternative 2 are identical. The differences between the alternatives regard silvicultural and fuels treatments on the same 289 acres. These acres are east of Forest System Road 4860-000. See Section 2.0 for more information on these alternatives. Both alternatives have a moderate risk of invasive species infestation. The project elements include timber removal, fuels reduction and associated actions, such as temporary road construction and road maintenance. These activities create disturbed, bare ground and remove competitive vegetation which may be preventing the growth of invasive species. Application of fire has a higher risk of promoting the spread of invasive annual grasses. There will also be rock product material imported to the area for the repair and maintenance of roads. The project area currently has low levels of weeds due to past control efforts. Conceivably, all the treatment acres would become more susceptible to some degree of weed establishment as a result of these alternatives. The level of disturbance activity determines the risk of weed introduction and infestation. Alternative 2 may have a slightly higher risk to 289 acres, since it proposes more removal of mature canopy and fuels

removal, creating more favorable conditions for invasive species. This area also experiences ongoing disturbance from maintenance activities and public use, including recreation and OHV activity. These vectors were also considered in this analysis. While there are several vectors included in this risk analysis, the risk ranking is still considered moderate, because the current weed populations are of low to moderate densities.

Project Design Criteria associated with the alternatives would provide mitigation for the introduction of new weed species and would reduce the spread of current invasive species into areas without infestation as well as to other areas of the forest. This prevention would occur through the cleaning of equipment, use of weed-free materials, and restoration with weed-free native seed. Machinery would be washed prior to its arrival on forest land. Haul routes, landings and certain known infestations within treatment units would be treated prior to implementation, under the previous NEPA analysis.

### Invasive Weed Risk Assessment

Factors considered in determining the level of risk for the introduction or spread of noxious weeds are:

#### HIGH

Has to be a combination of the following three factors:

1. Known weeds in/and or adjacent (~ 100 feet) to the project area, in large quantities
  - a. (High density/acre).
2. Any five or more of vectors 1 - 8 in the immediate project area.
3. Project operation activities not able to avoid weed populations.

#### MODERATE

Has to be a combination of the following three factors:

1. Known weeds in/and or adjacent (~ 100 feet) to the project area, in moderate quantities
  - a. (Moderate density/acre).
2. No more than four of vectors 1 - 8 present in the immediate project area.
3. Project operation activities not able to avoid weed populations.

#### LOW

Has to be one of the following factors:

1. No more than three of vectors 1 - 8 present in the immediate project area.
2. No Known weeds in/and or adjacent (~ 100 feet) to the project area without vectors
3. Project operation activities are able to avoid weed populations.

Vectors (if contained in the project proposal) ranked in order of weed introduction risk:

1. Heavy equipment (implied ground disturbance)
2. Importing soil, cinders, or gravel
3. OHV/ATV's (mountain bikes, motorcycles, 4-wheelers etc.)
4. Grazing livestock (long-term disturbance)

5. Pack animals (short-term disturbance)
6. Plant restoration (active restoration, soil scarification, seeding, etc.)
7. Recreationists/General Public (hikers, hunters, camping, mushroom/firewood gathering)
8. Forest Service/contractor project vehicles

### 3.2.3 - Cumulative Effects

#### Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Cumulative effects are impacts on the environment that result from the incremental impact of an action when it is added to other past, ongoing, and reasonably foreseeable future actions. A cumulative effects analysis for each resource considers activities relevant to the resource which overlap in time and space. The area analyzed for cumulative effects on invasive species risk includes the project area boundary, designated haul routes and directly adjacent lands 100 feet from the project boundary within private ownership, federal ownership and designated wilderness that would be affected by the alternatives. Areas 100 feet adjacent to the planning area could also experience edge effects from the change in stand conditions. These areas are spatially connected by travel routes and vectors for invasive weed spread or include habitats of concern for invasion.

The temporal scale of this cumulative effects analysis includes past thinning projects, future fuels reduction and associated actions proposed as part of this analysis, as well as future grazing practices within this allotment. The conditions created by past actions have been incorporated into the existing condition of the Invasive Species reports and serve as a baseline for the effects determination. The interdisciplinary team listed projects and activities that should be considered in the cumulative effects analysis. This information is included in the project record.

The harvest of timber and activities associated with this project, as well as continuing recreational use and future grazing activities may have an increased risk of weed introduction or spread. All of these activities may introduce new invasive species or spread existing populations through disturbance. These projects overlap in space and would overlap in time as the projects are implemented. These combined actions would have a cumulative effect at the landscape scale, affecting sensitive plant and wildlife habitat, as well as other resources.

Measures may be taken to greatly reduce these cumulative effects. Monitoring and aggressive weed treatment immediately after discovery would lessen the impact and spread of new noxious weed species. Treatment could include manual and herbicide treatments followed by seeding with native plant species appropriate for this area. Under the 2008 Site-Specific Invasive Plant Treatment EIS, roadside populations would be treated regularly depending on the need and level of infestation. Project Design Criteria, as discussed above, would mitigate for the introduction and spread of invasive species. PDC would only apply to project activities, and would not mitigate for the other ongoing or future activities listed above.

### 3.3 - Consistency with Management Direction

The identification of management and prevention is consistent with the analysis conducted in the Site-Specific Invasive Plant Treatments for Mt. Hood National Forest and Columbia River Gorge National Scenic Area in Oregon FEIS/ROD (USDA 2008).

Alternative 1 and Alternative 2 are consistent with Forest Plan Direction that prioritizes the identification and control of invasive plants. Forest Plan direction established by the 1988 Managing Competing and Unwanted Vegetation ROD and the 1989 Mediated Agreement was superseded by the 2005 Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants FEIS. Standards and guidelines for invasive species management were included in this document. Project Design Criteria 11-G, 12-G and 13-G ensure project compliance with the relevant standards and guidelines.

### 3.4 – Summary of Effects

Under the existing conditions, no timber harvest or associated activities would occur. Continued maintenance and public use of this area would have a low risk of invasive species spread.

Alternative 1 has a moderate risk of weed introduction. The harvesting activities would create disturbed conditions for invasive species growth, and the equipment may introduce seeds or propagules from nearby roadside sources. Mitigations are proposed to reduce the risk of invasive species spread.

Alternative 2 has a moderate risk of weed introduction. The harvesting activities would create disturbed conditions for invasive species growth, and the equipment may introduce seeds or propagules from nearby roadside sources. This Alternative may have a higher invasive species risk than the Proposed Action within 289 acres of proposed shelterwood treatments, where the created, open stand conditions would favor invasive species growth. Mitigations are proposed to reduce the risk of invasive species spread.

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