



United States Department of Agriculture
Forest Service

Waucoma

Huckleberry Enhancement

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 Waucoma project. This project is in compliance with 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 high 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. A risk assessment is conducted to determine if the proposed action, or taking no action, would result in new or increasing invasive species infestations.

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). Noxious weeds are identified by the Oregon Department of Agriculture (ODA) and the Oregon State Weed Board. 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 ¹
Armenian (Himalayan) blackberry	<i>Rubus armeniacus</i> (<i>R. procerus</i> , <i>R. discolor</i>)	B
Broom, Scotch	<i>Cytisus scoparius</i>	B
Field bindweed	<i>Convolvulus arvensis</i>	B
Knapweed, diffuse	<i>Centaurea diffusa</i>	B
Knapweed, meadow	<i>Centaurea pratensis</i>	B
Knapweed, spotted	<i>Centaurea stoebe</i> (<i>C. maculosa</i>)	B, T
Perennial peavine	<i>Lathyrus latifolius</i>	B
St. Johnswort	<i>Hypericum perforatum</i>	B
Thistle, bull	<i>Cirsium vulgare</i>	B
Thistle, Canada	<i>Cirsium arvense</i>	B

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.

¹ 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.

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>
Foxglove	<i>Digitalis purpurea</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Reed canarygrass	<i>Phalaris aquatica</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, extensive surveys of roadways within and accessing the project area were conducted during the 2018 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 or a lack of action.

3.0 – Analysis of Invasive Species

3.1 – Existing Condition

This project area has been subject to many types of past disturbances and has multiple resource uses today. It has a long history of timber removal, targeted species planting, wildfires and wildfire suppression. This area is bordered to the east and south by privately owned lands, including timber emphasis lands. There is also recreation use along roadways, trails and two campgrounds within the planning area. The area is visited for hunting, huckleberry harvesting and other resource use. An irrigation ditch and pipeline are within the planning area that require regular maintenance from Irrigation District staff.

There are heavy infestations of invasive species on lands to the east and south of the project area. There are also populations of these species primarily along roadways or trails within the area. These plants are growing into the roadway and can easily catch in vehicles or equipment. Seed may also be transported in soil, within the tire tread of vehicles and equipment. There are limited weeds present within the proposed treatment units. The presence of invasive weeds along roadways in this area increased following the Eagle Creek Fire in 2017, when these access roads were brushed and chipped. Equipment and vehicles introduced seeds from neighboring properties and created conditions favorable to invasive species growth. Efforts were made to establish native plants along these roadways to prevent weeds but were not able to

immediately prevent this growth. Efforts are ongoing to control these populations and to work with adjacent landowners on invasive species management.

3.1.1 – Knapweed Species

Meadow and spotted knapweed are the primary invasive species of concern in this project area. These weeds are growing densely along the roadways accessing the planning area, and there are small, but dense infestations along roads within the project area. The frequent traffic along these roads, and the presence of other vectors makes the spread of these plants 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 – St. Johnswort

St. Johnswort is present sporadically throughout the roadways of this project area. It is not often densely grown, but outside of the project boundaries there are heavy infestations.

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.

3.1.2 – 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 is appearing along roadsides in conjunction with knapweed or St. Johnswort. Thistles, bindweed and reed canarygrass are limited within the project area. There are populations of Himalayan blackberry and Scotch broom scattered along the roadways outside of the project area, but these two species are not found within the project area yet. These species all have the potential for spread or infestation within the project area.

3.2 –Environmental Consequences

3.2.1 - Direct and Indirect Effects of No Action

With no action, there would be few short-term effects. Conditions of invasive species would continue to persist at similar levels.

This area would likely experience a stand-replacing wildfire in the future if current high-density stand conditions do not change. The dense canopies and fuel loading may result in severely burned conditions on the ground. This would create favorable conditions for invasive species colonization and spread from the current infestations.

3.2.2 - Direct and Indirect Effects of Proposed Action

This project has a high risk of invasive species infestation. The proposed action includes timber removal, piling of slash 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. There would also be rock product material imported to the area for the repair and maintenance of roads. The project area is bounded by large populations of spotted and meadow knapweed, and minor populations of other species. Conceivably, all the treatment acres would become more susceptible to some degree of a weed establishment opportunity, as a result of this proposed action. Some acres would be more susceptible compared to others. The level of disturbance activity determines the risk of weed introduction and infestation.

Project Design Criteria associated with the Proposed Action 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 bikers, 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

The area analyzed for cumulative effects was within the Lower West Fork Hood River, Odell Creek–Hood River, and Grays Creek-Columbia River 6th field subwatersheds. These areas are spatially connected by travel routes which are vectors for invasive weed spread. This also includes sensitive habitats of concern for invasion. The temporal scale of this cumulative effects analysis includes past thinning projects on both federal and private property, utility corridor operations and maintenance, and future thinning and associated actions proposed as part of this analysis.

The harvest of timber and activities associated with this project, as well as continuing recreational use and harvest activities on neighboring private property may have an increased risk of weed introduction or spread. 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 would be taken to greatly reduce these cumulative effects. Project Design Criteria, as discussed above, would mitigate for the introduction and spread of invasive species. Monitoring and aggressive weed treatment immediately after discovery of new species introduced during project implementation would lessen the impact and spread of new infestations. Treatment would 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. These combined actions would lower the risk of invasive species introduction or spread within the project area. For these reasons, cumulative effects would not likely be substantial.

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).

This project is 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

The proposed action has a high 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.

4.0 - References Cited

Coombs, E.M., J.K. Clark, G.L. Piper, and A.F. Cofrancesco, Jr. (eds.). 2004. Biological control of invasive plants in the United States. Oregon State University Press, Corvallis. 467 p. (cited in text as (Coombs et al 2004))

Davis, E.S., P.K. Fay, T.K. Chicoine, and C.A. Lacey. 1993. Persistence of spotted knapweed (*Centaurea maculosa*) seed in soil. *Weed Science* 41(1): 57-61. (cited in text as (Davis et al 1993))

Fletcher, R.A. and A.J. Renney. 1963. A growth inhibitor found in *Centaurea* spp. *Canadian Journal of Plant Science* 43: 475:481. (cited in text as (Fletcher 1963))

Kelsey, R.G. and L.A. Locken. 1987. Phytotoxic properties of cnicin, a sesquiterpene lactone from *Centaurea maculosa* (spotted knapweed). *Journal of Chemical Ecology*. 13(1):19-33. (cited in text as (Kelsey 1987))

Marsh, C.D. and A.B. 1930. Clawson. Toxic effect of St. johnswort (*Hypericum perforatum*) on cattle and sheep. *USDA Technical Bulletin No. 202* (cited in text as (Marsh 1930))

Oregon Department of Agriculture. 2019. Noxious weed policy and classification system 2019. Accessed at www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx (cited in text as (ODA 2019))

Sheley, R.L., J.S. Jacobs, and M.F. Carpinelli. 1998. Distribution, biology, and management of diffuse knapweed (*Centaurea diffusa*) and spotted knapweed (*Centaurea maculosa*). *Weed Technology* 12(2): 353-362. (cited in text as (Sheley 1998))

Tisdale, E.W., M. Hironaka, and W.L. Pringle. 1959. Observations on the autoecology of *Hypericum perforatum*. *Ecology*. 40(1): 54-62. (cited in text as (Tisdale 1959))

USDA Forest Service. 2019. Natural Resource Managers Threatened Endangered Sensitive Plants-Invasive Species National Data Base.

USDA Forest Service, Mt. Hood National Forest. March 2008. Site Specific Invasive Plant Treatments for Mt. Hood National Forest and Columbia River Gorge National Scenic Area in Oregon, including Forest Plan Amendment #16 (Record of Decision, Final Environmental Impact Statement). (Cited in text as (USDA 2008))

USDA Forest Service, Region 6, Pacific Northwest Region. September 2005. Final Environmental Impact Statement for the Invasive Plant Program, Preventing and Managing Invasive Plants, (Record of Decision). (cited in text as (USDA 2005))

Wallander, R. T, B. E. Olson, and J. R. Lacey. 1995. Spotted knapweed seed viability after passing through sheep and mule deer. *J. Range Manage.* 48:145-149. (cited in text as (Wallander 1995))

Watson, A. K. and A. J. Renny. 1974. The biology of Canadian weeds. 6. *Centaurea diffusa* and *C. maculosa*. *Can. J. Plant Sci.* 54:687-701. (cited in text as (Watson 1974))

Winston, R., M. Schwarzenlander, C.B. Randall, and R. Reardon. 2012. Biology and biological control of common St. johnswort. *Forest Health Technology Enterprise Team 2010-05 2nd Ed.* (cited in text as (Winston 2012))