Lightning Creek Restoration Project

Noxious Weeds Report

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Introduction

The Forest Service Handbook (FSH 3409) defines a strategy for managing pests, including noxious weeds, as "a decision-making and action process incorporating biological, economic and environmental evaluation of pest-host systems to manage pest populations" (FSH 3409.11, 6/86). This strategy is termed Integrated Pest Management (IPM).

The overall IPNF strategy is to contain weeds in currently infested areas and to prevent the spread of weeds to susceptible but generally uninfested areas. The 1989 IPNF Weed Pest Management EIS describes the strategy. Weed management activities in the district are guided by the Sandpoint Noxious Weed Control Project EIS (USDA Forest Service 1998a).

Noxious weeds are those plant species that have been officially designated as such by federal, State or county officials. In Weeds of the West by Whitson et al. (1991), a weed is defined as "a plant that interferes with management objectives for a given area of land at a given point in time." The federal Noxious Weed Act of 1974 defines a noxious weed as "a plant which is of foreign origin, is new to, or is not widely prevalent in the United States, and can directly or indirectly injure crops or other useful plants, livestock or the fish and wildlife resources of the United States or the public health" (P.L. 93-629).

The Idaho Noxious Weed Law defines a "noxious weed" as any exotic plant species established or that may be introduced in the State which may render land unsuitable for agriculture, forestry, livestock, wildlife or other beneficial uses and is further designated as either a statewide or countywide noxious weed (Idaho Code 24 Chapter 22).

Both federal and state laws define weeds primarily in terms of interference with commodity uses of the land. However, the impacts of noxious weeds on non-commodity resources such as water quality, wildlife, and natural diversity are of increasing concern.

Regulatory Framework

Federal legislation, regulations, policy, and direction that require development and coordination of programs for the control of noxious weeds and evaluation of noxious weeds in the planning process include the following:

- National Forest Management Act (NFMA) (1976)
- National Environmental Policy Act (NEPA) (1969)
- Forest Service Manual (Chapter 2080, as amended) (2001)
- Executive Order #13112 (1999)
- IPNF Forest Plan (1987)
- IPNF Weed Pest Management EIS (1989)
- Sandpoint Ranger District Noxious Weed Control Project EIS (1998)

Affected Environment

Methodology

Information on current weed infestations and results of weed management in the project area is derived from records of previous weed treatment and monitoring and from observations during past field surveys for rare plants.

Documented Noxious Weed Infestations

Documented weed species in the project area include the following:

Species	Infestation Level*
spotted knapweed (*Centaurea maculosa* Lam.)	low
goatweed (*Hypericum perforatum* L.)	low to heavy
oxeye daisy (*Leucanthemum vulgare* L.)	low to moderate
meadow hawkweed (*Hieracium pratense* Tausch.)	low
orange hawkweed (*Hieracium aurantiacum* L.)	low
common tansy (*Tanacetum vulgare* L.)	low to moderate

* A description of weed infestation levels is included in the project file

These species occur along Forest roads in the project area. Though not well documented, off-road infestations of goatweed and spotted knapweed likely occur in the project area.

Current Weed Management Efforts

Forest roads and trails in the project area were identified in the Sandpoint Noxious Weed Project FEIS as Sites #10-14 (USDA Forest Service 1998a). Forest Road 419 was first treated for noxious weeds in 1999; follow-up treatments have occurred since that year (see project file). Following wildfires in the Lightning Creek drainage in 2000, during which old roads in the drainage were opened for access by firefighters, the re-opened roads were treated for weeds, decommissioned, seeded and fertilized (see project file).

Spotted knapweed and goatweed are considered naturalized in northern Idaho and, at least to some extent, in the project area. Management of these species will emphasize reducing infestation levels and slowing their rate of spread. Biological control agents for knapweed (*Metzneria paucipunctella*, *Urophora affinis* and *U. quadrifasciata*) are established in Idaho (Rees *et al*. 1996) and have been identified in the project area. The goatweed biological control agent Chrysolina quadrigemina was first released in the United States in 1946 and is now well established in Idaho (Rees *et al*. 1996); it has been identified in the project area. Additional biological control agents for goatweed and knapweed may be released in the project area as appropriate.

Meadow and orange hawkweed, oxeye daisy, sulfur cinquefoil and Canada thistle are currently established but are not considered naturalized in the project area. They are largely confined to Forest roads in the project area. Infestations will be monitored and contained, with eradication where feasible.

Of major concern are potential new invaders (see project file) not yet documented in the project area. In accordance with guidelines in the Northern Region Overview (USDA Forest Service 1999), management priorities emphasize identification and eradication of tansy ragwort, leafy spurge and yellow starthistle. Some additional weed species listed as noxious in Bonner County and recorded as occurring there have not yet been documented in the project area. These species would be a high priority for eradication if any individuals were observed during operations or monitoring in the project area.

Environmental Consequences

Methodology

Analysis was conducted based on current distribution of weed species in habitats similar to those found in the proposed treatment areas and on the types of proposed project activities. The estimation of risk of weed spread and introduction of new weed invaders from the proposed activity is based on peer-reviewed literature, experience in the project area and on similar sites in the IPNF, and professional judgment.

Effects of the proposed activities on noxious weed spread are based on the predicted amount of soil and/or understory vegetation disturbance. Although tree canopy removal also affects noxious weed spread, none of the alternatives propose tree canopy reduction; therefore, tree canopy removal is not relevant to the effects analysis for noxious weeds.

Long-term effects on the ability to treat weeds and the cost-efficiency of future weed treatments are discussed qualitatively relative to the miles of open, restricted and closed road and miles of motorized and non-motorized trail that result from each alternative.

The cumulative effects analysis area describes the area beyond which effects of the proposed project cannot be detected. Determination of the cumulative effects area for weeds considered the extent of currently documented weed infestations and likely seed dispersal distances. While patterns of dispersal are not known with certainty for many plant species, in studies of *Botrychium virginianum* most spores fell within three meters of the source plant (Peck *et al*. 1990). Noxious weed species' seeds that are heavier than *Botrychium* spores might be assumed to have similar if not more restricted dispersal patterns. Transport of weed seeds out of the project area is possible, with occasional transport over long distances (such as on vehicles). However, it would be difficult to predict the extent of such long-distance dispersal. It is likely that most seeds of noxious weeds would fall close to the parent plant.

In addition, road systems and lands adjacent to the project area have noxious weed infestations similar in composition and distribution to those in the project area, so transport of weed seeds to these lands from the project area would have little additional impact. For these reasons, the cumulative effects analysis area for noxious weeds is the project area.

Cumulative effects with regard to noxious weeds from proposed activities are generally described as very low, low, moderate or high, with the following definitions:

- *very low* = no measurable effect on existing weed infestations or susceptible habitat
- *low* = existing weed infestations and/or susceptible habitat not likely affected
- *moderate* = existing weed infestations or susceptible habitat affected, with the potential for expansion into uninfested areas and/or establishment of new invaders
- *high* =weed infestations and/or susceptible habitat affected, with a high likelihood of expansion into uninfested areas and/or establishment of new invaders.

The following past, current, ongoing and reasonably foreseeable events apply to the cumulative effects analysis for noxious weeds:

Past Activities and Events

- Timber harvest on NFS lands

- Road and trail construction on NFS lands
- Road decommissioning on NFS lands
- Development on private lands
- Flood events in 1918, 1974, 1980, 1986, 1990-1991, 1996-1997, and 2003-2004

Current and Ongoing Activities

- Helispot maintenance
- Road and trail maintenance

Reasonably Foreseeable Actions

- Noxious weeds monitoring and treatment
- Silver Button mining exploration
- Mortensen Small Tract Act
- Hope Sagle Land Exchange
- Huckleberry Snowmobile Trailhead Expansion
- Forest Road 1022A Bridge Removal

The period for measuring short-term cumulative effects to noxious weeds and susceptible habitat is ten years following completion of the proposed activities, or, in the event of selection of the No Action Alternative, ten years after the date of the signing of the Decision Notice and FONSI. The ten-year period is based on the expected recovery and/or establishment of desired species in disturbed areas.

Design Features, Mitigation and Monitoring

Required Mitigation

1. Noxious weed treatment would be conducted according to guidelines and priorities established in the Sandpoint Noxious Weed Control Project FEIS (USDA 1998). Methods of control may include biological, chemical, mechanical and cultural. Follow-up treatments and monitoring would be conducted as needed.

2. Gravel or borrow pits to be used during road construction or reconstruction would be free of new weed invader species (as defined by the IPNF Weed Specialist). A list of weed species considered to be potential new invaders is included in the project file.

3. Any priority weed species (as defined by the IPNF Weed Specialist) identified during road maintenance would be reported to the District Weed Specialist. A list of priority weed species is included in the project file.

4. Cleaning of off-road equipment would be required prior to entry onto National Forest lands. If operations occur in areas infested with new invaders (as defined by the IPNF Weed Specialist), all equipment would be cleaned prior to leaving the site.

5. All new (relocated) road segments, reconstructed roads, new trailheads and new parking areas would be seeded with a weed-free native and desired non-native seed mix and fertilized as necessary.

6. All straw or hay used for mulching or watershed restoration activities would be certified weed-free.

7. Road segments identified for weed treatment and proposed for decommissioning would be treated prior to decommissioning.

Estimated Effectiveness: The above mitigation measures are accepted weed prevention practices developed by public land management agencies and university cooperative extension offices and promoted by weed management organizations across the nation (e.g. Sheley et al. 2002, Drlik et al. 1998, USDA 2001). The above measures include those required in Forest Service Manual (FSM) 2080 for activities related to roads. They are described in FSM 2981.2- 1a and FSM 2081.2 - 6a, respectively (see project file). Also included are weed prevention practices recommended but not required (see project file).

For new weed invaders, the estimated effectiveness of the above measures is high; the measures are expected to be very effective at preventing establishment of new invaders. According to current research (Hobbs and Humphries 1995), early detection and treatment of infestations before explosive spread occurs can significantly reduce the social cost of weed invasions.

For existing infestations that occur along road rights-of-way, estimated effectiveness is moderate; the measures are expected to be somewhat effective at reducing the spread of these in the project area. For existing infestations that have spread off the road, estimated effectiveness is low. Effectiveness of treatments on National Forest lands could be reduced if adjacent landowners do not treat their weed infestations. Existing weeds and new invaders are also spread by wildlife, winds, water and recreationists – the mitigation measures would have no effect on these sources of weed spread.

Required Monitoring for Noxious Weeds

IPNF Forest Plan Monitoring

According to the Forest Plan, “many noxious weed species (knapweed, goatweed, thistle, tansy, etc.) are widespread, and…major programs to eradicate such species are not possible within expected budget levels”. IPNF direction is to give priority to small infestations of “species new to an area, where moderate control actions have a good chance of preventing the establishment of new problems.” Noxious weed control will be based on an integrated pest management approach.

Project Monitoring

Pretreatment of roads and equipment as proposed (see Features Common to All Action Alternatives) would be documented on contract inspection reports. The effectiveness of seeding disturbed areas would be evaluated upon completion of the activity. Treated areas would be surveyed and monitored according to treatment priorities established in the Sandpoint Noxious Weed Control Project FEIS.

Direct and Indirect Effects

Direct and indirect effects of the alternatives are discussed below. Direct effects relate to the amount of new disturbance from project activities and the resulting risk of weed introduction and spread expected under each alternative.

Indirectly, the miles of open road, motorized trail and non-motorized trail resulting from implementation of the different alternatives would result in varying degrees in the risk of weed

spread and the cost efficiency of future weed treatment activities. These differences are discussed below for each of the alternatives.

Direct and Indirect Effects Common to All Alternatives

With implementation of any alternative, seeds from any weeds on private and National Forest roads in the project area may still be transported within and out of the area by OHVs, passenger vehicles, people, birds, and wildlife.

Untreated weed infestations on private lands in the project area could spread to public lands. Soil and vegetation disturbance related to the flood event of November 2006 but not within areas proposed for restoration under the action alternatives would remain vulnerable to weed infestation under all alternatives.

Direct and Indirect Effects Common to Alternatives 3 and 4

Under both action alternatives, noxious weeds monitoring and treatment would occur as needed to reduce the risk of weed spread in the project area. Weed treatment would occur under the Sandpoint Noxious Weed Control FEIS (USDA Forest Service 1998a). Most restoration activities would occur in areas disturbed by the 2006 flood event, so little new disturbance would occur.

The risk of introduction and establishment of new weed invaders to the project area is expected to be low with implementation of the required design features (see Chapter II). Preventive seeding of native and desired nonnative species in areas of new disturbance would reduce the risk of weed spread. Contract requirements to clean off-road equipment prior to entry into NFS lands would further reduce the risk of introduction of weeds. Therefore, except for road decommissioning, the proposed activities would have little direct effect on the spread of weeds in the project area.

Pre-treatment of existing infestations on roads and road segments proposed for decommissioning followed by preventive seeding would reduce the risk of further spread over time to current levels. In addition, newly decommissioned roads would be monitored to detect new weed invaders and to assess the success of preventive measures. With increasing canopy coverage of desired species, risk of weed spread on the decommissioned roads would decline to below the level for open or gated roads.

Direct and Indirect Effects of Alternative 1 - No Action

Under this alternative, there would be no change from current management activities in the project area. Because there would be no road reconstruction, the risk of weed spread would not change from current levels. Indirectly, continued restricted access to much of the drainage would make further weed treatment more difficult and more expensive than under the action alternatives and thus less likely to occur. In the absence of further weed treatment, existing weed infestations would be expected to spread unchecked.

Implementation of this alternative would result in approximately 22 miles of open road, 3 miles of restricted road (closed to motorized use April 1-November 15), 6 miles of restricted motorized trail, 61 miles of closed road, 34 miles of motorized trail and 71 miles of non-motorized trail. No road decommissioning would occur. The high amount of motorized trail would increase the risk of weed spread by OHVs more than either Alternative 3 or 4. However, overall use of the drainage may be less with this alternative than with one of the action alternatives.

Direct and Indirect Effects of Alternative 3

Implementation of this alternative would result in approximately 55 miles of open road, 9 miles of restricted road (closed to motorized use April 1-November 15), 4 miles of closed road, 2 miles of motorized trail and 76 miles of non-motorized trail in the Lightning Creek drainage.

Approximately 50 miles of road would be decommissioned under this alternative. While road decommissioning could initially increase the risk of weed spread due to ground disturbance, successful implementation of design features described in Chapter II would reduce the risk over time.

Restoring access to much of the drainage as proposed would increase use by vehicles and may also increase the risk of weed introduction and spread. However, weed treatment and monitoring would be less difficult and less expensive than under Alternative 1.

Direct and Indirect Effects of Alternative 4

Implementation of this alternative would result in approximately 43 miles of open road, 0.1 mile of restricted road, 3 miles of closed road, 8 miles of motorized trail (Option A) or five miles of motorized trail (Option B) and 89 miles of non-motorized trail in the Lightning Creek drainage.

Under this alternative, Forest Road 642 would be converted from open road to OHV trail; as a result, follow-up weed treatments on this road would be more labor-intensive and, therefore, more expensive. There would also be a risk of weed introduction and spread from OHV traffic on this road.

Construction of a new OHV trail to allow administrative access the Bear Mountain SNOTEL site would create disturbance conducive to weed spread. Implementation of design features described in Chapter II would reduce but would not eliminate the risk of weed spread on this new trail.

Approximately 53 miles (Option A) or 57 miles (Option B) of road would be decommissioned under this alternative. While road decommissioning could initially increase the risk of weed spread due to ground disturbance, with successful implementation of design features described in Chapter II the risk would decrease over time.

Restoring access to the drainage as proposed would increase use by vehicles and may also increase the risk of weed introduction and spread. However, weed treatment and monitoring would be less difficult and less expensive than under Alternative 1.

Cumulative Effects

Cumulative Effects Common to All Alternatives

Past disturbances, both human caused and natural, have provided soil and vegetation disturbance conducive to invasion of noxious weeds. Past timber harvest, road construction and development on private lands often employed inadequate weed prevention measures. As a result, the project area currently supports infestations of spotted knapweed, goatweed, oxeye daisy, hawkweeds and common tansy.

Current, ongoing and reasonably foreseeable actions on NFS lands that include soil or vegetation disturbance require implementation of weed prevention practices such as those described in Chapter II; therefore, the risk of spread of existing infestations from the above-listed actions is considered to be low.

Under all alternatives, weed infestations may expand to inaccessible areas that were affected by the 2006 flood event; these would provide a long-term seed source for expansion elsewhere in the project area. The risk of expansion of these infestations would be low to high, depending on the location and extent of future disturbances and their proximity to existing untreated infestations.

Cumulative Effects of Alternative 1

Because future access to the Lightning Creek drainage would be limited under this alternative (see Direct and Indirect Effects of Alternative 1 above), further weed treatment in the project area would be less likely to occur than under the action alternatives. Untreated existing weed infestations would be expected to expand unchecked to many areas disturbed by the 2006 flood event. With restricted access to the drainage, detection and eradication of any new invaders would also be more difficult and more expensive. The risk of new invaders becoming established would therefore be higher than with either action alternative. The risk of spread of existing infestations would be moderate to high.

Cumulative Effects Common to Alternatives 3 and 4

While soil and vegetation disturbance related to the flood event of November 2006 but not within areas proposed for restoration under the action alternatives would be vulnerable to weed infestation (see Cumulative Effects Common to All Alternatives above), implementation of either action alternative would improve the ability to treat and monitor existing infestations, thus reducing the risk of their expansion. Improved vehicle access would allow for more cost effective weed treatment and monitoring than under the No Action alternative.

Given the above analysis and the design features described in Chapter II, the risk of new invaders becoming established would be low under either action alternative.

Cumulative Effects of Alternative 3

Because this alternative would restore the highest amount of road to passenger vehicle traffic, the risk of weed spread from vehicles would be higher than under Alternative 4. Because of the increased access, the cost of monitoring and treating weeds in the project area would be expected to be lower than under Alternative 4. However, the higher risk of weed spread predicted under this alternative may negate the benefits of lower treatment costs.

Given the above analysis and the design features described in Chapter II, the long-term risk of spread of existing infestations would be low to moderate under this alternative.

Cumulative Effects of Alternative 4

Restoration of access to Porcupine Lake road (642) that is restricted to motorized vehicles $\leq$ 50 inches wide would increase the cost of monitoring and treating weeds along that road and increase the risk of weed introduction and spread by OHVs. Following completion of restoration activities, any herbicide weed treatment along road 642 would be by ATV and/or backpack sprayer. However, under this alternative, Lake Darling trail would be closed to all motorized vehicles, thus reducing the risk of weed introduction and spread along that trail.

Given the above analysis and the design features described in Chapter II, the long-term risk of spread of existing infestations would be low to moderate under this alternative.

Consistency with the Forest Plan, Other Policy and Regulations

According to Forest Plan (USDA Forest Service 1987) direction, infestations of many noxious weed species, including knapweed, goatweed and common tansy, are so widespread that control would require major programs that are not possible within expected budget levels (Forest Plan, p. II-7). Forest Plan direction is to "provide moderate control actions to prevent new weed species from becoming established". The No Action alternative meets Forest Plan direction by not creating disturbance conducive to new noxious weed invasions or spread of existing weed populations. Alternatives 3 and 4 meet Forest Plan direction by providing moderate control actions through project design, as required by the Forest Plan, to prevent new weed species from becoming established.

It should be noted that, since the Forest Plan was implemented in 1987, the issue of weed infestations on national forest lands has evolved to encompass broader issues of native ecosystem integrity and the effects to non-commodity resources and ecosystem processes. Funding levels for noxious weeds prevention, monitoring and treatment since the mid-1990s have increased the likelihood of success of weed management efforts (see the project file). The forest plan revision process will consider the increased emphasis on weed management.

Mitigation measures described in Chapter II to reduce the risk of weed spread are as required in Forest Service Manual Chapter 2080, as amended (2001). In addition, several recommended, but not required, practices related to roads and timber harvest activities are included (see Chapter II). FSM requirements and regulations related to noxious weeds are included in the project file.

According to Executive Order #13112 (1999), "Federal agencies whose actions may affect the status of invasive species, shall, to the extent practicable and permitted by law, identify such actions; subject to the availability of appropriations and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and not authorize, fund or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species…unless…the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions."

At the project level, noxious weeds have been identified and weed prevention measures incorporated into the proposed action. The potential for weed spread was disclosed for the proposed action and all other alternatives, including no action.

References

Drlik, T.; I. Woo and S. Swiadon, editors. 1998. Integrated vegetation management guide. Bio-Integral Resource Center. Berkeley, California. 16 pp.

Executive Order 13112. 1999. Invasive species. Order by President Bill Clinton to prevent the introduction of invasive species and provide for their control. Signed February 3, 1999. Washington D.C.

Hobbs, Richard and Stella E. Humphries. 1995. An integrated approach to the ecology and management of plant invasions. *In:* Conservation Biology. 9(4):761-770.

Peck, J.H., C.J. Peck, D. R. Farrar. 1990. Influences of life history attributes on formation of local and distant fern populations. *In*: American Fern Journal 80(4): 126-142.

Rees, Norman E. Paul C. Quimby, Jr., Gary L. Piper, Eric M. Coombs, Charles E. Turner, Neal R. Spencer and Lloyd V. Knutson, eds. 1996. Biological control of weeds in the west. Western Society of Weed Science. Bozeman, Montana.

Sheley, Roger; Mark Manoukian and Gerald Marks. 2002. Preventing noxious weed invasion. MONTGUIDE MT 199517 AG 8/2002. Montana State University Extension Service. Bozeman, MT. 3pp.

USDA Forest Service. 1987. Idaho Panhandle National Forests Forest Plan. Coeur d'Alene, Idaho.

USDA Forest Service. 1998a. Sandpoint Noxious Weed Control Project Environmental Impact Statement. Idaho Panhandle National Forests, Sandpoint Ranger District. Available at the district office.

USDA Forest Service. 1999. Northern Region Overview. USDA Forest Service Northern Region. Missoula, Montana.

USDA Forest Service. 2001a. Guide to noxious weed prevention practices. Version 1.0. Available online at http://fsweb.sanjuan.r2.fs.fed.us/range/fsweedprevention_070.doc.

USDA Forest Service. 2001b. Forest Service Manual 2080. Noxious weeds. Supplement No. R1 2000-2001-1. Northern Region. Missoula, Montana.

Whitson, Tom D., Larry C. Burrill, Steven A. Dewey et al. 1991. Weeds of the West. Western Society of Weed Science. Bozeman, Montana.