

**Final  
Environmental  
Impact  
Statement**



**Noxious Weed  
Treatment Project**  
*Summary*

March 2003



**Bitterroot National Forest**

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# SUMMARY

## INTRODUCTION

The Bitterroot National Forest (Forest) of the United States Department of Agriculture (USDA) proposes to implement specific noxious weed treatments and prevention measures on approximately 35,445 acres of Forest land in support of the Forest's Integrated Weed Management Plan and Forest Plan, U.S. Forest Service (USFS) policy, and Executive Order 13112. The proposed weed treatment and management project (Project) is located on the Forest, which is approximately 1.6 million acres in Ravalli County, Montana. Proposed methods to control noxious weeds include a combination of ground and aerial application of herbicides; mechanical, biological, and cultural weed treatments; education; and prevention. The Project area is distributed across the Montana portion of the Forest and occurs only on National Forest System land.

## PURPOSE OF AND NEED FOR ACTION

The purpose and need for the Proposed Action is to prevent and reduce loss of native plant communities associated with spread of noxious weeds. Specifically, the purposes of this Project are to accomplish the following within proposed treatment areas:

- Prevent or discourage introduction and establishment of newly invading weed species on Forest land, particularly areas at high risk due to recent fires;
- Prevent or limit spread of established weeds into areas with few or no infestations on Forest land, particularly areas at high risk due to recent fires;
- Restore native plant communities and improve forage on specific big game summer and winter ranges;
- Treat weeds near the Forest boundary where adjacent landowners are interested in or are currently managing weeds; and,

- Limit spread of weeds into and within wilderness areas.

Burn areas are at high risk for weed invasion due to removal of overstory vegetation and litter, and as a result of fire suppression activities. Although weeds establish and spread rapidly on disturbed sites, they can also invade native bunchgrass community inter-spaces in the absence of disturbance. Aerial observations, aerial photographs, and ground surveys were used to review burned areas for risk of noxious weed establishment. High risk areas include those where:

- Tree canopy and most ground-level native plants were killed or severely injured;
- Burn severity was moderate or high;
- Noxious weeds were present in or adjacent to the burned area prior to the wildfires of 2000 (e.g., infested parklands and grasslands); and
- Site is dry to moderately dry.

## SUMMARY OF PROPOSED ACTION

The intent of the Proposed Action (Alternative A) is to prevent and reduce loss of native plant communities associated with the spread of noxious weeds. The Proposed Action includes treatment of approximately 35,445 acres in the following areas:

- Approximately 29,503 acres of known infestations at specific sites distributed across the Forest; and
- Approximately 5,942 acres of High Risk Burned Areas (if monitoring/surveys indicate presence of invasive weeds).

This Project would also include pre- and post-treatment monitoring and follow-up treatments.

Specific treatment sites, size (acres), target species, and treatment method(s) are described

in further detail in Chapter 2. The Proposed Action is composed of several elements, which would individually or in combination address the various *Purpose and Need* components. These elements include:

- Ground and aerial application of herbicides (as the primary method of treatment) on approximately 5,942 acres of previously forested areas at high risk for weed invasion due to fires. This addresses the need to prevent or discourage introduction and establishment of newly invading weed species, and limit spread of existing infestations on previously forested areas at high risk due to recent fires. This would also address the need to restore native plant communities in infested areas on big game winter and summer ranges (if monitoring identifies new infestations).
- Ground application of herbicides (as the primary treatment method) on Forest roads, trails, and recreation areas where weeds exist in relatively uninfested areas (approximately 14,107 acres). This addresses the need to prevent or limit spread of existing infestations into relatively uninfested areas both within and outside burned areas. This also addresses the need to prevent or discourage introduction and establishment of newly invading weed species. Spot treatment with ground-applied herbicides along trail corridors and trailheads would help to limit spread of weeds into wilderness areas.
- Aerial and ground application of herbicides on big game winter and summer range (approximately 10,007 acres) meets the purpose and need to restore native plant communities in these infested areas.
- In conjunction with winter range treatments, six areas along the Forest boundary (approximately 5,317 acres) would be treated to coincide with active weed management on land adjacent to the Forest. A combination of treatment methods would be employed to address the need to treat weed infestations along the Forest boundary where adjacent landowners are interested in or are currently managing weeds.

- Biological agents would be released on 20 sites on the Forest including big game winter ranges, burned areas at high risk, cross-boundary cooperation treatment areas, and recreation sites. Introduction of biological agents would follow initial treatment with herbicide.
- Cultural treatments (seeding) would occur on disturbed areas such as road cuts and burned areas 1-2 years following treatment with herbicides. Seeding is intended to re-establish native plant communities while decreasing the density of invasive weed species.
- Education and prevention programs on the Forest would continue with addition of specific education and prevention strategies developed for this Project.
- Mechanical (mowing/hand-pulling) treatments would be intermittent due to roadside obstacles such as rocks, logs, trees, and shrubs and would occur on level surfaces, some shoulder areas, and turn-outs or parking areas. Mowing, topping, and hand-pulling would likely occur twice per year. Established rhizomatous weeds may have to be mowed indefinitely since mowing would decrease seed production, but would not kill the plants.

## ISSUES USED TO DEVELOP ALTERNATIVES

The following issues were used to develop alternatives to the Proposed Action:

- Potential effects of herbicides on human health;
- Potential effects of aerial application of herbicides;
- Potential effects of the Proposed Action on big game, other wildlife, native plant communities, sensitive plants, fish, water quality, soil, and air quality;
- Potential effects of proposed treatments on wilderness values;

- Potential for ground disturbing activities to further spread weeds on the Forest as a “connected action”;
- Amendment to the Forest Plan; and
- Potential effects of the Proposed Action on travel.

## PROJECT ALTERNATIVES

### ALTERNATIVE B

Alternative B was developed in response to potential impacts associated with aerial application of herbicides on non-target areas. Alternative B would incorporate all components of the Proposed Action (Alternative A) but would eliminate aerial application of herbicides. Areas proposed for aerial application of herbicide would instead be treated by ground application methods where possible. This strategy would rely on education, biological management, and ground applied herbicides to reduce and contain existing invasive weeds and eradicate small, new, and isolated invasive weed populations. Areas with slopes greater than 40 percent or remote infestations difficult to access would not be treated with ground-based equipment. Approximately 10,400 acres could not feasibly be treated with ground-based equipment due to terrain and physical restraints. Approximately 25,000 acres would be treated under Alternative B. Herbicide treatment of all sites would probably not exceed 5,000 acres annually. Proposed treatment of roads, trails and recreation sites, and fire camps and helispots would be the same as those proposed under Alternative A.

### ALTERNATIVE C

Alternative C was developed in response to public concerns over potential effects of herbicides on human and ecological health. This alternative would eliminate use of herbicides and involve an integrated approach using mechanical (mowing, hand-pulling, and tillage), cultural (seeding), biological (parasites, predators, and pathogens), and prevention methods to improve native plant communities on big game winter and summer ranges; burned, wilderness, and recreation areas; and, roads and trails. Treatments such as hand-pulling, topping, and mowing would be supplemented with cultural

methods such as seeding. This alternative would treat fewer acres than Alternatives A, B, or E due to the feasibility and cost of accomplishing labor intensive treatments.

Cooperation and coordination with adjacent landowners treating weeds on private and State land would also be key in this alternative. The majority of treatments occurring or proposed on adjacent private and State land include use of herbicides. Treatments on Forest land associated with this cross-boundary cooperation effort would be limited to treatment methods described in this alternative, which do not include use of herbicides.

Roadside treatments are proposed primarily for arterials and collectors on the Forest. Mowing treatments would be intermittent due to roadside obstacles such as rocks, logs, trees, and shrubs and would occur on level surfaces, some shoulder areas and turn-outs or parking areas. Acreage associated with roadside treatments under Alternative C is based on a mowing width of 10-feet on either side of a road (20-feet total). Based on these criteria, approximately 25 percent (785 acres/327miles) of Forest Roads would be treated.

Mowing, topping, and hand-pulling would occur twice per year. Established rhizomatous weeds may have to be mowed indefinitely since mowing would decrease seed production, but would not kill the plants.

Approximately 1,500 acres would be treated under Alternative C. Due to increases in bare soil that would result from pulling, some areas would be reseeded. An additional \$10,000 to \$20,000 per year would be used to obtain and release biological control agents on Project areas.

### ALTERNATIVE D - NO ACTION

Under the No Action Alternative, existing weed management programs on the Forest would remain in place and no additional treatment of weeds or travel restrictions associated with the Proposed Action would occur.

### ALTERNATIVE E

The Forest developed Alternative E in response to public comments received on the Draft Environmental Impact Statement (DEIS). Reviewers wanted assurance that herbicides

would be used in a judicious manner as part of an integrated weed management program that placed greater emphasis on native ecosystem restoration, weed prevention, public notification, and monitoring. Alternative E is similar to Alternative A, except that some treatment areas have been refined/adjusted in response to specific comments on the DEIS.

Alternative E would treat approximately 43,400 acres. New areas include those identified as currently “weed-free,” more trails and trailheads, and two demonstration areas. Additional mitigation measures that restrict herbicide use and provide more safeguards for water, soil, wildlife, human health, and non-target plant species are included.

Alternative E would include an expanded monitoring plan to evaluate implementation of weed treatments and effectiveness of such treatments. Monitoring results are used to improve implementation of future weed treatments and reduce potential resource effects. Alternative E also contains demonstration areas for small ruminant (goats and/or sheep) grazing to treat weeds.

Under Alternative E, aerial application of herbicide has been reduced from about 13,532 acres in Alternative A to about 11,041 acres. Ground application of herbicides has been increased from about 21,913 acres in Alternative A to 31,908 acres. This alternative also contains currently weed free areas (7,106 acres) not in Alternative A, which would be aggressively treated if weeds were discovered.

Herbicide treatment of all sites may reach approximately 5,000 acres annually, including both initial and re-treatments for skips. Aerial application of herbicides probably would not exceed 3,000 acres annually. The first year of the project, aerial application would be used on about 1,000 acres, to demonstrate the technique and monitor effectiveness of this method. Treatments of fire camps and heli-spots (about 72 acres) would occur as described in Alternative A.

Under Alternative E, approximately 5 acres per year within the 1,100 acres identified for hand-pulling could potentially be treated using this method. Biocontrol agents would be authorized for release at all winter and summer ranges, high-risk burn sites, cross-boundary treatment

areas, and recreation sites, totaling 35,771 acres. Demonstration areas would be established to show the effectiveness of grazing for weed control (382 acres) and hand-pulling (48 acres).

Biological, cultural, and mechanical treatments, education, and prevention would occur as described under *Treatment Methods in Action Alternatives* in Chapter 2.

## SUMMARY OF IMPACTS

Analysis of potential impacts and mitigation associated with the Proposed Action and Alternatives is presented in Chapter 4 – *Consequences of the Proposed Action and Alternatives*. The following is a summary of potential impacts, by resource, resulting from the Proposed Action and Alternatives.

## SOIL RESOURCES

A short-term increase in sediment production from additional soil disturbance created by mechanical treatments associated with the Proposed Action would be an impact to the soil resource. Application of herbicides would effectively reduce the density of invasive weeds and promote beneficial vegetative recovery, restore surface protection, and provide erosion control benefits in the long-term. Aerial application of herbicides would not create soil disturbance and is not expected to add to existing levels of soil instability or degradation. Mechanical, biological, and herbicide treatments of noxious weed infestations are expected to maintain or increase current levels of native plant communities and diversity and thus help maintain soil stability and quality.

## AIR QUALITY

Management and treatment of noxious weeds, including aerial and ground application of herbicides, can cause emissions of criteria air pollutants and trace amounts of other compounds. In assessing noxious weed management activities, the primary indicators of public health impacts are ambient air quality impacts above the National Ambient Air Quality Standards (NAAQS) for PM<sub>2.5</sub> and PM<sub>10</sub>. Emissions of NO<sub>x</sub>, VOC, and CO from vehicle and aerial fuel combustion can also impact the

NAAQS for NO<sub>2</sub>, O<sub>3</sub>, and CO. Ambient impacts from the treatment activities have been reviewed, and emissions though minor, from the combustion of fossil fuels during vehicle and aerial applications have been found to be within air quality standards. Road dust from vehicle traffic is the primary air contaminant source. Air quality standards would be met under all alternatives.

## **WATER RESOURCES**

Alternative A is expected to result in long-term reductions in sediment load to surface water because weed treatments would reduce density of weeds and promote beneficial native vegetative recovery, restore surface protection, and provide erosion control benefits. Due to limited acreage proposed for weed treatment as compared to total drainage area, no measurable increases in runoff or sediment in surface water are expected from Alternative A, except possibly near some large treatment areas in the short-term.

Use of herbicides would cause additional chemical loading to the environment. Any measurable herbicide concentrations in surface water and/or groundwater would be short-term and limited to areas in close proximity to treatment areas due to dilution and degradation of chemicals in soil and water. No adverse impacts on aquatic resources in surface water would occur from herbicide application. If any herbicide drift from aerial application reaches a stream or other water body, the small amount of herbicide in drift would be diluted to low or non-detectable concentrations. Herbicides that persist in soil could affect groundwater where soil is permeable and water is shallow. These impacts, however, would be minor, short-term, and localized to application areas.

For Alternative B, non-treatment of approximately 10,400 acres could result in increased runoff, erosion, and sedimentation in affected watersheds. Similarly, Alternatives C and D would result in increasing surface water sedimentation because fewer infested acres would be treated and destabilization of soil from noxious weed growth would continue.

Environmental protection measures for Alternatives B and E would further reduce risk of impacts on water resources, such as additional

buffer zones and restrictions on herbicide applications to specified annual acreages.

## **WILDLIFE**

Potential adverse impacts to wildlife, including elk, marten, pileated woodpecker, bighorn sheep, forest land birds, and other groups, would be minimal if Alternative A is implemented. Potential impacts evaluated include effects from herbicides, noise, human disturbance including road and trail use, and vegetation composition change. Positive impacts include maintenance or increase in native grass and forb cover on treatment areas and adjacent areas potentially invaded by uncontrolled weeds. Implementation of Alternative B would eliminate herbicide control on a number of slopes greater than 40 percent, primarily on elk, mule deer, and bighorn sheep winter ranges. Carrying capacity on these areas would likely continue to be reduced. Long-term impacts associated with implementation of Alternative C include potential for more areas of weed infestations and less forage and habitat diversity than under Alternatives A and B. Under Alternative C, wildlife would not be exposed to herbicides.

The No Action Alternative (Alternative D), would negatively impact a number of wildlife species through continued loss of habitat diversity on treatment areas and adjacent areas as weeds continue to spread. Impacts from Alternative E would be similar to that described for Alternative A, based on acres treated in a single year. However, more total acres would be treated through the 10-year Project life.

## **THREATENED, ENDANGERED, PROPOSED, AND SENSITIVE SPECIES**

Direct and indirect impacts on threatened, endangered, and sensitive wildlife species from implementation of Alternatives A, B, C, or E are expected to be minimal. Greatest potential impacts would be loss of or change in prey base for predators such as bald eagle, gray wolf, wolverine, peregrine falcon, flammulated owl, great gray owl, boreal owl, and northern goshawk, for Alternative D if weed infestations continue to expand on the Forest.

## FISHERIES AND AQUATIC RESOURCES

Implementation of Alternatives A, B, and E could result in direct effects of herbicide application on aquatic organisms or introduction to their habitat. Inadvertent exposure of fish and aquatic life to herbicides could affect life cycles. In addition to those proposed for Alternative A, environmental protection measures that restrict herbicide applications and provide more safeguards to water, air, soil, wildlife, and non-target plant species are included in Alternative E.

Restoration of native plant communities as a result of noxious weed control would maintain and/or enhance fish and aquatic habitats in the long-term. Alternative B would result in less potential for exposure of fish and aquatic life to herbicides because fewer acres would be treated and potential for drift of herbicide from aerial application would be eliminated. Alternative C and D would result in no exposure of fish and aquatic life to herbicides beyond those resulting from programs already in place on the Forest.

Mechanical, biological, and chemical control of weeds can have direct, indirect, and cumulative effects on the aquatic environment. Conversely, lack of control can have direct, indirect, and cumulative effects on the aquatic environment. The ecological risks of alternatives that do not consider use of herbicides would be long-term by allowing weeds to spread and potentially necessitate use of greater amounts of herbicides in the future. With environmental protection measures in place, risks of direct and indirect impacts are minimal under Alternatives A, B and E. Long-term impacts on the aquatic environment may develop under Alternatives C and D if weeds are not controlled, regardless of the type of treatment.

## VEGETATION

### Plant Communities

Implementation of Alternatives A and E would treat noxious weeds on approximately 35,400 acres and 43,400 acres, respectively. Dry forest and grassland vegetation types dominate proposed treatment areas. Spraying herbicides on these areas may impact non-target broad-

leaved forbs, though the extent and duration of these impacts is expected to be short-term. Long-term benefits to native vegetation in proposed treatment areas should result. Alternative B would treat noxious weeds on approximately 25,000 acres, with less potential for non-target impacts from spray drift due to the elimination of aerial application of herbicides, but would leave approximately 10,400 acres at risk from noxious weed invasion. Environmental protection measures in Alternatives B and E would reduce the risk to non-target vegetation. Implementation of Alternative C or D (No Action) would not benefit native plant communities in proposed treatment areas and would result in continued invasion and spread of noxious weeds in these areas.

### Threatened, Endangered, And Sensitive Plants

Implementation of Alternatives A or E may result in direct and indirect impacts to known populations of sensitive plant species. Populations of candystick, hollyleaf clover, Lemhi beardtongue, Payette beardtongue, tapered-root orogenia and dwarf onion occur within the boundaries of proposed treatment areas in Alternative A. Implementation of Alternative E may impact the above species as well as woolly-head clover, Rocky Mountain paintbrush, and puzzling rockcress. Populations of tapered-root orogenia, dwarf onion, candystick, sandweed, western pearl-flower, scalepod, Lemhi beardtongue, Bitterroot bladderpod, and taper-tip onion are known to occur within 500 feet of proposed treatment areas. Mitigation should prevent these species from being directly affected by herbicides from aerial or ground applications, trampling by applicators, and/or damage from mechanical methods. Indirect impacts could occur from spray drift. Environmental protection measures could include plant avoidance, fall application of herbicides, or covering plants. Alternatives B and C could have indirect impacts if mechanical treatments are not carefully conducted. No herbicide application risks are associated with Alternative D – No Action. However, long term benefits to special status species from herbicide treatments that reduce competition from undesirable species are also not realized.

Populations of plants of special concern in the state of Montana or to the Confederated Salish



and Kootenai Tribe may also be impacted either directly or indirectly by herbicide treatments. These species include bitterroot, camas, northern golden-carpet, and dwarf purple monkey-flower. Northern golden-carpet only occurs along streamsides, seeps, and springs. Treatments in such areas are expected to be limited. Impacts to populations of bitterroot and camas would be limited due to the plant's reduced above ground foliage and briefly persistent flowers. Studies done in 1996-97 (in conjunction with Confederated Salish and Kootenai Tribe) with herbicide treatments on both these species have shown minimal effect on bitterroot or camas plants when treated with clopyralid. Because populations of both species are currently threatened by encroachment of spotted knapweed and sulfur cinquefoil, long term benefit to these species should result from herbicide treatment.

## **ACCESS AND LAND USE**

Implementation of Alternatives would not result in changes to existing land use and access on the Forest.

## **GRAZING MANAGEMENT**

Implementation of Alternatives A and E would result in beneficial impacts on 12 and 13 grazing allotments, respectively. The Darby Ranger District has three allotments, North Sleeping Child, Harlan, and Skalkaho, that may benefit from proposed aerial and ground treatments. The Stevensville Ranger District has one allotment, Bass Creek, that may benefit from proposed hand grubbing and spot-spraying. The Sula Ranger District has nine allotments, Andrews, Bunch Shirley, Camp Reimel, East Fork, Meadow Tolan, Medicine Tree, Sula Peak, Warm Springs and Waugh Gulch, that may benefit from proposed aerial and ground treatments.

## **RECREATION, ROADLESS AND WILDERNESS**

Direct and indirect impacts on recreation, wilderness, and roadless areas resulting from implementation of action alternatives would include short-term encounters with herbicide treatment crews and visual impacts from wilting plants. Some wilderness advocates would

perceive that wilderness values were being reduced by the use of chemical weed control methods within wilderness. Cumulative effects resulting from action alternatives would be the protection of adjacent non-infested areas and preservation of intact plant communities, which would enhance the recreation and wilderness experience.

## **VISUAL RESOURCES**

Direct and indirect impacts to visual resources resulting from implementation of action alternatives would be short-term. Visual effects of treatment (dying, wilting, and dead plants) may adversely affect the visual experience for some people. Loss of native vegetation under the No Action Alternative would have a negative impact on the visual quality for some users.

## **HERITAGE RESOURCES**

There would be no direct or indirect impacts on heritage resources from application of herbicides or biological agents, provided appropriate environmental protection measures are implemented. Potential impacts on cultural resources could occur during application of mechanical treatments. Known heritage resources (cambium peeled trees) located in areas proposed for treatments are not considered vulnerable to damage because they would be avoided.

## **SOCIAL AND ECONOMIC RESOURCES**

The status and treatment of noxious weeds is important to most Bitterroot Valley residents. Using herbicides to treat weeds creates concern for some people due to a fear that herbicides may cause health related problems for both humans and wildlife. Implementation of an aggressive weed treatment program on the Forest would result in a slight increase in local service and retail business for the duration that treatment activities would be taking place.

## **HUMAN HEALTH**

Potential human health risks to workers from mechanical weed control measures include cuts, burns, allergies and skin irritation to individuals doing the work. The direct effects on human

health would be greatest to allergy and contact dermatitis sufferers who are sensitive to invasive weeds or other wild land vegetation. Biological and cultural management would not impose a risk to human health of workers or the public.

Potential health risks resulting from use of herbicides would be a function of the amount of chemical handling and length of exposure of the herbicide to applicators. The length of exposure during ground application of herbicides is greater than for aerial application. Risks of exposure are greater for ground application because it involves more frequent mechanical mixing, more opportunities for direct handling and exposure to the herbicide, and working closer to the nozzle of the application device. Of the methods used to ground-apply herbicides, backpack applications have the greatest potential for worker exposure.

Potential health risks to the public are a function of the amount of inadvertent exposure through contact with treated vegetation, consumption of contaminated vegetation or water, and herbicide drift. Whether a person is exposed to treated vegetation is largely a function of the probability of a person contacting treated vegetation within several hours of application. Since ground treatment requires many small applications, the public's chance of encountering a sprayed area is greater than that associated with aerial application, where large acreage is treated at one time. Ground application requires more mixing and increases the likelihood of an accidental release to which the public could be exposed.

There is potential for herbicide drift associated with aerial application; however, estimates of potential drift suggest that if herbicides are applied in accordance with specified environmental protection measures, drift does not represent a significant pathway for public exposure.

Aircraft application requires less herbicide handling and fewer workers as compared to ground application. Environmental protection measures under Alternative E reduce the risk of herbicide application in comparison to Alternative A.

Under Alternative B, all project areas would be treated by backpack, OHV, and truck mounted delivery systems, increasing the potential for worker exposure and accidental releases, due to the number of acres treated on the ground.

Potential exposure of workers or the public to herbicides would not exceed the daily exposure level determined to be safe by the U.S. Environmental Protection Agency over a 70-year lifetime of daily exposure under any action alternative.

## **AGENCY PREFERRED ALTERNATIVE**

The agency preferred alternative is Alternative E.