

DRAFT

UPPER SUN RIVER WATERSHED

DRAFT WEED MANAGEMENT PLAN

Prepared for

ROCKY MOUNTAIN FRONT WEED ROUNDTABLE

By
Mark Korte
April 2020

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I. INTRODUCTION

Description of site

The Sun River is located on Rocky Mountain Front and flows east across the boundary between the Great Plains and the Rocky Mountains. The drainage supports a robust agricultural community consisting mostly of traditional ranch operations that rely mainly on grazing, but also include some small grain/hay production. The drainage encompasses a broad range of natural habitat types including fescue and mixed grasslands, riparian zones, aspen woodlands and fescue/limber pine savannah. Biologically these communities are relatively intact and represent unique or distinctive habitat types.

II. OVERVIEW OF WEED MANAGEMENT PLAN

A. General Management Philosophy

Weed control is part of overall land management. Focus will be on the species and communities wanted in place of the weed species, rather than simply eliminating weeds. Preventative programs have been implemented to keep the site free of species that are not yet established there but are known to be pests elsewhere in the region and to limit spread of established weeds. We will set priorities for the control or elimination of weeds that have already been established on the site, according to their actual and potential impacts on agriculture and to native species. We will take action only when careful consideration indicates leaving the weed unchecked will result in more damage than controlling it with available methods.

Sun River weed management will follow an adaptive strategy that:

- Establishes and records goals for the drainage.
- Identifies species that block us from achieving these goals and assign them priorities based on their impacts.
- Considers methods for controlling them or otherwise diminishing their impacts.
- Implements the control methods and monitors the results.
- Evaluates the effectiveness of actions in the light of goals and uses the information to modify and improve control priorities, methods and plans.
- Starts the cycle again by establishing new methods/goals.

B. How priorities are set

Priorities are set in the hope of minimizing the total, long-term workload. Therefore, we act to prevent new infestations and assign highest priority to existing isolated infestations that are the fastest growing, most disruptive, and affect the most highly valued areas. We also consider the difficulty of control, giving higher priority to infestations we think we are most likely to control with available technology and resources. The first goal is to prevent new weeds from spreading. The second goal is to control the spread of current infestations using herbicide or mechanical means to manage small, isolated patches and bio controls/perimeter containment on large patches. Regular surveys of weed vectors such as ditches, roads, two-tracks and stream corridors will also be conducted.

III. INTEGRATED WEED MANAGEMENT METHODS

PREVENTION. This method is the most cost effective form of weed control. **It can also be the most difficult to implement because it challenges many established ways that we manage land.** It is an attempt to curb weed problems before they exist. Examples include:

- Limiting vehicle/ATV and stock access to weed infestations.
- Washing vehicles regularly, especially after exposure to weed infestations.
- Limiting vehicle/ATV access to property for recreational use by clearly defining travel corridors and parking areas that can easily be monitored.
- Avoiding the use of fill or gravel from weed infested sources.
- Using weed-free hay whenever possible.

Anything that can prevent new species and new infestations of existing weeds from establishing will be money and effort well spent. Finding new weed infestations early is important and best implemented by regular and systematic surveys. **Prevention also means thinking about and looking for new weeds anytime one is working or traveling on the landscape.**

MECHANICAL/PHYSICAL. These methods include weed pulling, mowing, etc. This is the method of choice for sensitive areas that are too close to water, dwellings, etc. to use herbicides. It is also the method of choice when weeds have set seed and herbicides are of limited effectiveness. Obviously, these methods are labor intensive and in some cases limited in effectiveness as a long term strategy, so the size and nature of the infestation must be considered when this technique is employed.

CHEMICAL. This is the most common and usually the most effective short-term method for dealing with weed infestations. Its effectiveness can be limited by the weed species in question as well as the location of the infestation. **TIMING IS CRITICAL! See Section V. – Dates.** Herbicide use can also be limited by the extent of the weed infestation and overall cost. While effective, herbicides are not necessarily the final answer to long term weed management.

BIOLOGICAL. When available, this is the best long-term management tool for control of large infestations of weeds.

REHABILITATION. This is an important part of any integrated weed management plan and simply recognizes that when weeds are removed from an area, some desirable vegetation should take their place to ensure that the site does not become re-infested. In most cases, simply thinning weed densities to allow

desirable plants to regain their competitive advantage is enough to get the process started

IV. OVERVIEW OF WEEDS, THEIR EFFECT ON MANAGEMENT GOALS AND PRIORITY LEVELS.

1. Spotted Knapweed Priority Level 1

Spotted knapweed spreads quickly and easily and has a highly negative impact on native vegetation. It has little or no forage value. It can form dense monocultures, particularly in drier sites and seeds can lay dormant at least 10 years before germination. Control efforts at each site must be repeated for at least this long to ensure eradication of this species. Knapweed patches are generally fairly easy to control by chemical or hand pulling. Common potential vectors for this species include vehicles, birds and practically any animal that passes through a patch while it is dropping seed or when the ground is muddy. Frequent surveys will be important to locate new patches and limit the spread of this weed. It occurs commonly throughout the drainage, but large infestations are mostly confined to the immediate riparian corridor.

2. Leafy spurge Priority Level 1

Leafy spurge has a highly negative impact on desirable vegetation and can form dense monocultures when well established. Because it is a deeply rooted perennial plant, control with herbicides can be difficult and mechanical control is nearly impossible. Common spread vectors for this plant include vehicles, ATVs and flowing water in ditches and streams. It not well established and occurs inscattered small infestations in the drainage and is considered somewhat toxic to most grazing animals.

3. Russian knapweed Priority Level 2

Russian knapweed is rihzomonous perennial plant that spreads rather slowly and is found in several isolated locations in the drainage. Similar to leafy spurge, it is difficult to eradicate. It is relatively easy to control with herbicides. Prime spread vectors include vehicles, contaminated gravel and hay. It is increasing in parts of the Upper Sun River drainage and should be aggressively treated.

4. Whitetop Priority Level 2

Whitetop is locally common in sub irrigated meadows and disturbed areas in the drainage. The full scope of this weed's distribution is not known. It can form dense monocultures and can be hard to manage long term. It spreads slowly, however, and therefore is considered a lower priority species that should be considered for treatment after other high priority species have been treated. Probably the most important spread vector for whitetop is infected hay.

IV. OVERVIEW CONTINUED.

5. Canada Thistle Priority 3

Canada thistle is a common weed in wet meadows. Because these areas are not suitable for herbicide application and because of the way the plant spreads widely thru wind dispersal of seeds, it is recommended that Canada thistle control be selective and limited. The Rocky Mountain Front Weed Roundtable will be initiating a pilot biocontrol program for Canada thistle on the RMF in 2020.

6. Musk thistle Priority 3

This plant is not on the State Noxious Weed List but is on the Teton County **Noxious** Weed List. It is fairly common in the Muddy Creek drainage

7. Houndstongue Priority Level 3

Houndstongue is locally common across the drainage. It typically invades and dominates disturbed sites such as high stock-use areas near buildings and naturally disturbed sites such as ground squirrel burrows. It spreads readily on animals and people. Because it does not easily invade healthy native grassland and because there is great promise of a very effective biocontrol, houndstongue is a lower priority species.

Possible new invaders. These species are a “watch list”

Ventenata – This invasive annual grass has been documented in the souther RMF and likely occurs in the Upper Sun River drainage.

Sulfur cinquefoil - There are many native cinquefoil species so getting a positive ID on a sample is very important. This species occurs in the Dearborn River drainage south of the Upper Sun River on the RMF along the Front.

Hoary Alyssum - Not known to be in the Upper Sun River drainage but has been reported in Teton County and surrounding drainages. This plant is 7-30” tall with white flowers in which the petals are notched like rabbit ears. Leaves are entire with no teeth or lobes. It is a member of the mustard family.

Perennial pepperweed - This close relative of white top is found just north of the Upper Sun River drainage in Deep Creek. It prefers wetter sub-irrigated hay meadows and riparian areas

St Johnswort – This weed is common in the Dearborn drainage on the RMF..

Hawkweeds – Orange and yellow hawkweed are both found in the Glacier National Park area of the RMF.

Blueweed.- This weed was found just below Diversion Dam on the Upper Sun River in 2015 and again 2018. Both infestations were at the same site at a boat launch and both infestations were eradicated. The site is checked annually by the Teton Co Weed District. A survey of Sun River gravel bars (a favorite site for this species) would be a worthwhile Activity to check for further spread of this species.

Any look-alike should be positively identified and reported to the Rocky Mountain Front Weed Roundtable.

V. INDIVIDUAL WEED SPECIES - GOALS AND MANAGEMENT

1. Spotted knapweed (*Centaurea stoebe*)

Spotted knapweed is the highest priority weed in the Sun River drainage. All known patches should be checked and treated at least once or ideally, twice per year. **SMALL PATCHES, ROADS, DITCHES AND TWO TRACKS ARE A PRIORITY.**

Goals: Limit spread. Manage all known patches. Regular surveys Map any new starts.

Treatment: Prevention, Herbicide, Mechanical, Bio controls. Prevention of of knapweed can best be achieved by limiting vehicle use off roads and proper livestock management. Herbicide will be used on nearly all patches in the drainage. **It is imperative that all infestations treated with herbicide be visited at least once and ideally twice per year to achieve maximum control.** Plants that have set seed can be pulled and bagged. Bio controls will be used on riparian infestations on the east end of the project area.

Herbicide: **Transline** (clorpyralid) @ 1 pint/acre for rangeland or woody/treed areas. **Milestone** (aminopyalid) @7 ounce/acre for rangeland or limited use near water.

Dates: Knapweed can be effectively controlled with herbicides when plants begin to bolt thru bud stage. Although weather dependent, his generally means early June thru mid July.

Any plants in bloom or past bloom should be hand-pulled and bagged. Spraying fall re-growth can effective prior to first hard frost.

2. Leafy spurge (*Euphorbia esula*)

Goal: Limit spread. Manage all known patches with either herbicide (small patches) or bio control (large patches). Survey spread vectors. Map new infestations.

Treatment: Herbicide for small patch management and large patch Containment. Bio control for large patch management.

Herbicide: **Tordon** (picloram) @ 2quarts/acre.
Plateau (imazipic) @10oz/acre

Dates: Surveys can be in conjunction with other weed surveys. Herbicide use

should be pre-bloom to bloom– early June thru early July or fall prior to hard frost.

3. Russian knapweed (*Acroption repens*)

Russian knapweed can best be controlled by limiting spread and aggressively treating existing patches with herbicide.

Goals: Control existing patches. Control spread. Monitor effectiveness.

Treatments: Milestone (aminopyralid) @ 5 .oz/acre.

Dates: Spring,

pre-bloom when plants are actively growing

4. Whitetop (*Lepidium draba*)

Whitetop can best be controlled by eliminating the use of contaminated hay.

Goal: Control existing patches. Control spread.

Treatments: Escort (metsulfuron) @ 1-2 .oz per acre.

Dates: Herbicides should be applied pre-bloom. **In Muddy Creek this generally means mid to late May.**

5. Houndstongue (*Cynoglossum officinale*)

Houndstongue can best be controlled by keeping stock away from existing patches and free from seeds.

Goals: Control existing patches. Control spread. Monitor effectiveness.

Treatments: Prevention thru stock management. Biocontrol. Herbicide. Hand-pulling.

Herbicides: Escort/Cimmaron (metsulfuron) @ 1-2 .oz/acre.

Dates: Herbicides should be applied when the plant is at the bolt stage – anywhere from early June thru early July. Plants are best hand-pulled when mature, but before seed set. Plants should be pulled and bagged after seed-set.

6. Canada thistle (*Cirsium arvense*)

Goal: Limiting further spread of Canada thistle. Monitor effectiveness.

Treatment: Canada thistle is susceptible to mechanical treatments. Mowing or live-stock trampling can significantly reduce weed densities in sensitive areas. Herbicide is also effective.

Herbicide: Milestone (aminopyralid) @ 7.oz/acre.

Dates: Mowing before seed set. Herbicide is best applied at the bolt thru pre-bloom stage, usually in mid-late June or fall.

7. Musk thistle (*Carduus nutans*)

- Goal:** Limiting further spread of Musk thistle. Monitor effectiveness.
- Treatment:** Musk thistle is susceptible to mechanical treatments. Mowing or live-stock trampling can significantly reduce weed densities in sensitive areas. Herbicide is also effective.
- Herbicide:** **Milestone** (aminopyalid) @ 7.oz/acre.
- Dates:** Mowing before seed set. Herbicide is best applied at the bolt thru pre-bloom stage, usually in mid-late June or fall

New invaders

- Goal:** Eradication
- Treatment:** Proper identification
- Herbicide:** Vary, so contact MSU Extension RMFWR, County Weed Districts for ID and herbicide recommendations.

VI. APPENDICES

Appendix 1. Calibration

Spray equipment will need to be calibrated at the beginning and middle of each spray season. Here is a brief description of the procedure:

- Measure and mark off an area 18.5 x 18.5 feet.
- Spray area uniformly with water and record the number of seconds this takes.
- Spray water into a container for this amount of time.

Amount of water in fluid ounces equals spray volume in gallons per acre

$$\frac{(341) (\text{fluid ounces sprayed})}{(\text{area sprayed in square feet})} = \text{spray rate in gallons/acre}$$

This tells you the volume of liquid your sprayer puts on the ground. You can then figure out how much chemical to put in your tank. For example, if the spray rate was 100gal/acre, and you wanted to spray 1 quart Tordon/acre, you would add 1 quart Tordon to 100 gallons of water in the tank, or 1 pint to 50 gallons, etc.

The long version of the above equation is as follows:

$$\frac{43,650 \text{ ft}^2}{1 \text{ acre}} \times \frac{\text{ounces sprayed (oz.)}}{\text{area sprayed (ft}^2)} \times \frac{1 \text{ gallon}}{128 \text{ oz.}} = \frac{\text{gallons}}{\text{acre}}$$

Useful Measurements and Conversions

3 teaspoons = 1 tablespoon

2 tablespoons = 1 fluid ounce

8 fluid ounces = 1 cup

1 cup = 16 tablespoons

2 cups = 1 pint

2 pints = 1 quart

4 quarts = 1 gallon

128 fluid ounces = 1 gallon

128 - 18.5 ft.x18.5 ft. plots = 1 acre

43,560 square ft. = 1 acre

ALWAYS REMEMBER TO READ THE HERBICIDE LABEL BEFORE APPLYING ANY HERBICIDE