

UPPER TETON RIVER WATERSHED

DRAFT WEED MANAGEMENT PLAN

Prepared for

ROCKY MOUNTAIN FRONT WEED ROUNDTABLE

By
Mark Korte
April 2020

TABLE OF CONTENTS

I. INTRODUCTION – Description of site.....	3
II. OVERVIEW OF WEED MANAGEMENT PLAN.....	3
A. General management philosophy.....	3
B. How priorities are set.....	3
III. INTEGRATED WEED MANAGEMENT METHODS.....	4
IV. OVERVIEW OF WEEDS, THEIR MANAGEMENT GOALS AND PRIORITY LEVELS.....	5
1. Spotted knapweed.....	6
2. Leafy spurge.....	6
3. Dalmation and Yellow toadflax.....	6
4. Whitetop.....	6
5. Russian knapweed.....	6
6. Houndstongue.....	7
7. Canada thistle.....	7
8. Musk thistle.....	7
9. New Invaders.....	7
V. INDIVIDUAL WEED SPECIES – GOALS AND MANAGEMENT.....	8
1. Spotted knapweed.....	8
2. Leafy spurge.....	8
3. Dalmation and yellow toadflax.....	8
4. Whitetop.....	9
5. Russian knapweed.....	9
6. Houndstongue.....	9
7. Canada Thistle.....	9
8. Musk thistle.....	10
9. New Invaders.....	10
VI. APPENDICES.....	11
Appendix 1 Calibration.....	11

I. INTRODUCTION

Description of site

The Upper Teton River and its two main forks 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.

Upper Teton 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. Goals and Priorities

Goals and Priorities

Most of the Upper Teton River watershed is currently weed-free, and the *primary management goal* is to maintain existing vegetation communities in their current weed-free condition. Several weed species currently occur in the watershed, and their priorities for management are described in the Existing Weeds section below. Where weeds are established, a *secondary goal* is to reduce weed impacts in these areas, where feasible.

To achieve these goals, the *first priority* is to prevent new weed species from establishing in the watershed and to prevent existing weed species from spreading. New, small, or isolated infestations are the highest priority for control because they are the fastest growing, have the greatest potential for further spread, and control actions can be highly effective. Finding these new infestations can be a challenge since they are small, but controlling them provides the greatest long-term benefits. Control along weed vectors such as roads and ditches is also a priority. Regular monitoring of treated patches and surveys of weed vectors are critical for preventing weed spread.

The *second priority* is reducing impacts of larger, more established infestations. Chemical control of large established infestations is more expensive and less effective at preventing overall weed spread than control of small patches. However, establishing biocontrol in large patches provides a cost-effective way to reduce weed spread and density over the long term. Where feasible, chemical or mechanical control of large patch perimeters will also help prevent spread to adjacent weed-free areas.

It is also important that priority be given to areas where management effort can be sustained over time. Management actions that are not sustained will likely be ineffective over the long term.

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. Much of the Upper Teton River riparian corridor is forested or otherwise largely made up of woody native species and and for this reason is suitable only for biological controls.

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

EXISTING WEEDS

High priority species significantly impact desired communities; strategic management action can be effective in reducing spread and achieving watershed goals.

Medium priority species have fewer impacts or spread more slowly than high priority species; management of these species should occur after high priority species are addressed or in limited strategic areas.

Low priority species may have fewer impacts or be more widespread and difficult to effectively control; control of these species is a low priority except possibly in limited strategic areas.

1. Spotted Knapweed *High Priority*

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 throughout the drainage, but for the most part patch sizes are small and manageable

2. Leafy spurge *High Priority*

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 is well established and widespread in the drainage and is considered somewhat toxic to most grazing animals.

3. Yellow and Dalmatian Toadflax *High Priority*

Found in only two locations in this drainage, eradication is possible and is the suggested goal. Both species are perennials with extensive root systems that make them extremely hard to control once they are established. Both have bright yellow showy flowers with orange “beards”. Dalmatian toadflax is generally taller, 3 feet, with broad-based clasping leaves. Yellow toadflax is shorter, generally 1 foot or less, with long narrow leaves.

4. Whitetop *Priority Medium priority*

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.

5. Russian knapweed *Medium priority*

Russian knapweed is a rhizomatous 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 should be aggressively treated but not until other higher priority weeds are managed properly. There is only one known infestation of Russian knapweed in the Upper Teton River Drainage.

6. Houndstongue *Medium priority*

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.

9. Canada Thistle *Low priority*

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.

10. Musk thistle *Low priority*

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 Teton River drainage

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

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

Blueweed – This perennial has been found along the Sun River south of the Upper Teton River

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 Teton River on the RMF.

Hoary Alyssum - Not known to be in the Upper Teton 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 south of the Teton River in Deep Creek. It prefers wetter sub-irrigated hay meadows and riparian areas

St Johnswort – This weed is common in the Dearborn drainage and has been found along the Teton Canyon Road .

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

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 Upper Teton 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 all isolated patches in the drainage and for large patch containment..

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 extensively on the riparian infestations thru out the drainage.

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, this 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 be effective prior to first hard frost.

2. Leafy spurge (*Euphorbia esula*)

Goal: Limit spread. Manage all isolated 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. Dalmatian and Yellow toadflax. (*Linaria genistifolia* and *L vulgaris*)

Dalmatian and yellow toadflax are only established in two known locations in the Teton River drainage.

Goal: Eradication

Treatment: Prevention. Proper identification while in the early infestation levels.
Herbicide: Tordon (picloram) 1-2qts/acre.
Telar (chlorsulfuron) 1.25oz/acre
Plateau (imazapic) 12 .oz/acre with 1 quart MSO surf. FALL

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 the Teton River this generally means mid to late May.

5. 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

6. Houndstongue (*Cynoglossum officinale*)

Houndstongue can best be controlled by keeping stock away from existing patches and free from seeds. There is an effective biocontrol moving south from Canada that will effectively control houndstongue once it becomes established. Pulled plants should be bagged and disposed of properly.

Goals: Control existing patches. Control spread. Monitor effectiveness.
Treatments: Prevention thru stock management. Herbicide. Hand-pulling.
Herbicides: Escort/Telar (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 whe

7. 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. Biocontrols may also soon be available.
Herbicide: Milestone (aminopyralid) @ 7.oz/acre.
Dates: Mowing before seed set. Herbicide is best applied at the bolt thru pre-bloom stage.

8. Musk thistle (*Cardus nutans*)

Goal: Limiting further spread of Canada 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. Biocontrols are well established.

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

Dates: Mowing before seed set. Herbicide is best applied at the bolt thru pre-bloom stage.

New invaders

Goal: Eradication

Treatment: Proper identification

Herbicide: Vary, so contact MSU Extension RMFWR Teton County Weed District 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:

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

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