

# **WEED MANAGEMENT PLAN**



**Asotin County Noxious Weed Control Board**

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

# Table of Contents

I	General Information	Page
-	Introduction	3
-	Asotin County Noxious Weed Control Board	3
-	Weed Board Philosophy	4
-	Goal	4
-	Mission Statement	4
-	Local Land Management Agencies	5
-	Services, Materials and Information	5
-	Board Meetings	5
-	Weed Control Districts	6
-	District Map	7
-	Ongoing Projects	8,9
II	Noxious Weeds	Page
-	Bull thistle ( <i>Cirsium vulgare</i> )	11
-	Canada thistle ( <i>Cirsium arvense</i> )	14
-	Dalmatian toadflax ( <i>Linaria dalmatica</i> )	17
-	Field bindweed ( <i>Convolvulus arvensis</i> )	21
-	Hawkweeds spp ( <i>Hieracium spp</i> )	24
-	Houndstongue ( <i>Cynoglossum officinale</i> )	27
-	Jointed goatgrass ( <i>Aegilops cylindrical</i> )	30
-	Kochia ( <i>Kochia scoparia</i> )	32
-	Leafy spurge ( <i>Euphorbia escula L.</i> )	34
-	Mediterranean sage ( <i>Salvia aethiopsis L.</i> )	36
-	Myrtle spurge ( <i>Euphorbia myrsinites</i> )	38
-	Oxeye daisy ( <i>Chrysanthemum leucanthemum</i> )	40
-	Poison hemlock ( <i>Conium maculatum</i> )	42
-	Puncturevine ( <i>Tribulus terrestris</i> )	45
-	Rush skeletonweed ( <i>Chondrilla juncea L.</i> )	48
-	Russian knapweed ( <i>Acroptilon repens</i> )	51
-	Saltcedar ( <i>Tamarix ramosissima</i> )	54
-	Scotch thistle ( <i>Onopordum acanthium</i> )	56
-	Spotted knapweed and Diffuse knapweed ( <i>Centaurea maculosa</i> ; <i>C. diffusa</i> )	59
-	St. Johnswort ( <i>Hypericum perforatum</i> )	63
-	Sulfur cinquefoil ( <i>Potentilla recta L.</i> )	65
-	Whitetop ( <i>Cardaria draba</i> , <i>C. pubescens</i> )	67
-	Yellow starthistle ( <i>Centaurea solstitialis</i> )	70
III	Literature Cited	74

## Introduction

This handbook is designed to be a quick and easy resource guide for land owners and managers in Asotin County, Washington. It is expected to promote better and faster identification of problem weeds and to disseminate knowledge concerning various control practices.

This *Weed Management Plan* should be considered a “work in progress”. Pages for additional weeds will be added from time to time. Information on weeds already listed will be updated as new knowledge concerning control techniques, distribution, etc. becomes available.

No endorsements by the Asotin County Noxious Weed Control Board are implied. This information has been assembled using the most reliable resources available at the time of printing. The Asotin County Noxious Weed Control Board does not assume any liability for the recommendations contained herein. Any use of pesticides or other chemicals contrary to the instructions on the printed label is neither legal nor recommended.

## Asotin County Noxious Weed Control Board

The Asotin County Noxious Weed Control Board (ACNWCB) consists of five members appointed by the Asotin County Commissioners, each representing a different geographical section of Asotin County. Weed Board members act in accordance with Revised Code of Washington (R.C.W.) 17.10 and Chapter 16-750 of the Washington Administrative Code (W.A.C.).

### Board Members

Don Polumsky  
District 1 (Peola)

Tom Petty  
District 2 (Cloverland)

Dan Sangster  
District 3 (Asotin Flats)

Jerry Hendrickson  
District 4 (Tenmile)

Harold Thompson, Chairman  
District 5 (Clarkston, Asotin)

Nelle Murray  
Coordinator

## **Weed Board Philosophy**

The invasion, establishment and spread of noxious weeds is one of the most serious threats to our natural resources today. Our wildlife, native vegetation, water quality, aesthetics, agricultural production, forest production and recreation either have been or are at risk of being altered to unacceptable levels due to the spread of noxious weeds.

The Asotin County Noxious Weed Control Board strives to represent the interests of all landowners and land-users in Asotin County. We are working to establish and maintain an integrated vegetation management approach toward the control of noxious weeds within our boundaries. We value the diversity of the land as well as the diversity of the people who choose to make this county their home.

## **Goal of the ACNWCB**

The goal of the ACNWCB is to eradicate, contain and/or control noxious weed populations in Asotin County. Noxious weeds, according to R.C.W. 17.10, are defined as, “any plant which, when established, is highly destructive, competitive, or difficult to control by cultural or chemical practices.” The board promotes a system of practices using integrated vegetation management. Integrated vegetation management means using all practical methods of weed control at the most effective time. Management recommendations may include mechanical, cultural, chemical or biological control efforts. The Board is committed to educational projects that enhance the public’s awareness of invasive weeds.

## **Mission Statement**

The mission of the Asotin County Noxious Weed Control Board is to carry out the State Noxious Weed Law (RCW 17.10) in a manner which assists the land managers and land users of Asotin County be responsible stewards of the land and resources by protecting and conserving our agricultural lands, recreational areas and natural resources from the degrading impact of exotic, invasive noxious weeds.

## **Local Land Management Agencies**

In addition to the Asotin County Noxious Weed Control Board office, the following local agencies are available to help you develop effective weed control measures and a general land management program for your property:

**Asotin County Cooperative Extension:**

Mark Heitstuman: (509) 243-2009  
135 2<sup>nd</sup> Street; Asotin, WA 99402

**Natural Resources Conservation Service:**

(509) 758-8012

## **Services, Materials, & Information Provided**

There are many sources of information available free of charge at the Weed Office. Plant identification books, videos, and actual plant samples are available for public use. The Weed Coordinator can visit your property at your request to help you identify weeds and make recommendations for future control. The Asotin Weed Office is located in the Court House Annex. Summer hours are Mondays 6:30 - 11:30 a.m. Winter hours are 7:00 - 8:30 a.m. Mondays, Tuesdays, and Wednesdays.

## **Board Meetings**

The public is invited and encouraged to attend our monthly board meetings. Unless noted otherwise, all meetings are held in the Weed Office at the Asotin County Court House Annex, 95 2nd Street, Asotin.

2005-2006 ACNWCB Board Meeting Schedule:

The first Monday of each month, 7:00 p.m.

# Asotin County Weed Control Board Districts

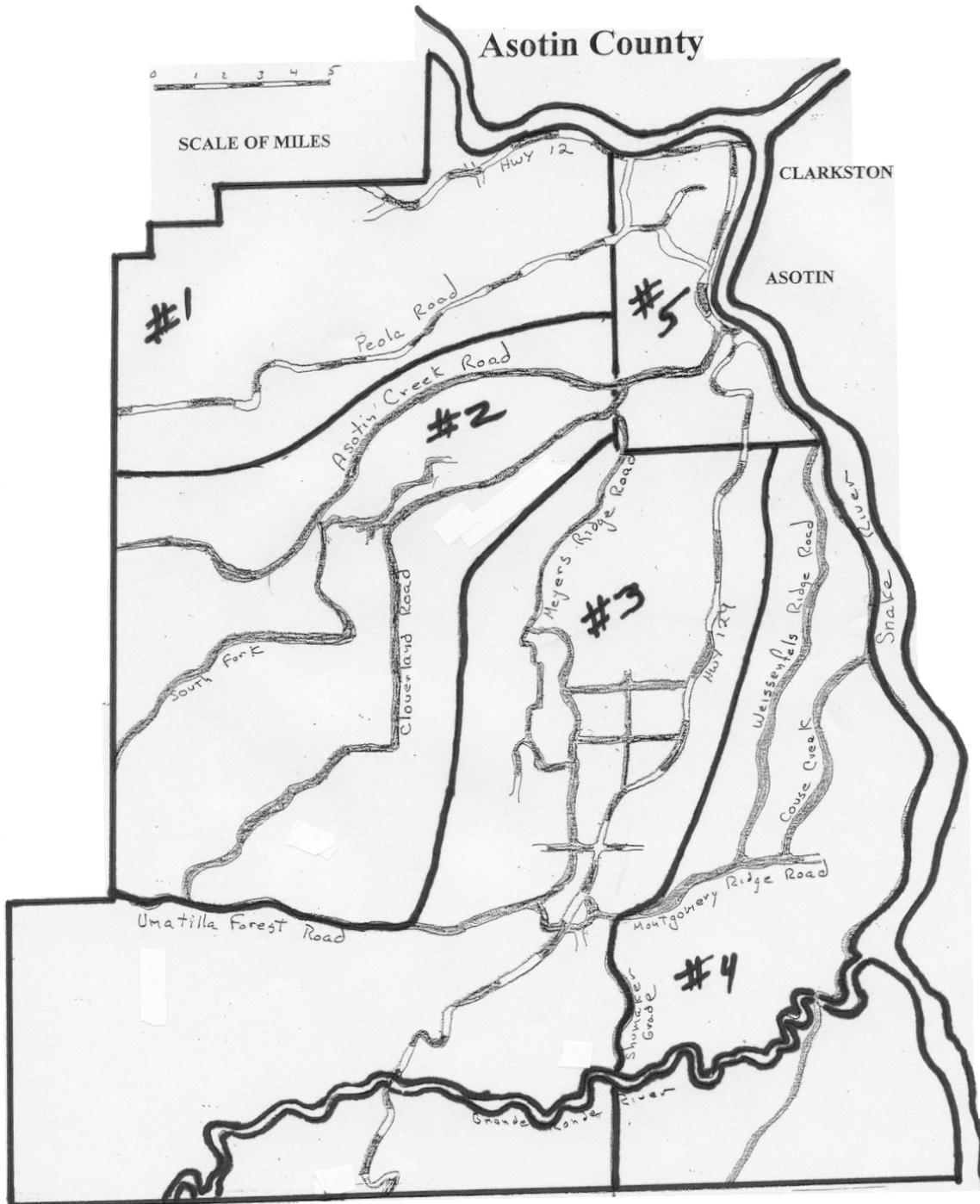
**District 1 (Peola)**, is generally that geographical area laying south of the Snake River, west of the city of Clarkston, north of Asotin Creek Road, and east of Garfield County.

**District 2 (Cloverland)**, is generally that geographical area laying south of Asotin Creek Road, north and west of the Cloverland Road, and east of Garfield County.

**District 3 (Asotin Flats)**, is generally that geographical area laying south and east of the Cloverland Road, west of Highway 129, north of the Asotin/Wallowa County line, and east of Garfield County.

**District 4 (Tenmile)**, is generally that geographical area laying south of Weissenfels Road, west of the Snake River, east of Highway 129, and north of Asotin/Wallowa County line.

**District 5 (Clarkston/Asotin)**, is generally that geographical area surrounding the cities of Clarkston and Asotin; extending south and west of the Snake River, east of a longitudinal line running through the junction of Asotin Creek Road and Cloverland Road, and north of a latitudinal line running through Weissenfels Road.



**Asotin County Noxious Weed Control Board Districts**

## Ongoing Projects 2005-2006

1. Cooperative partnerships with the Wild Turkey Federation, Nez Perce Biocontrol, Center for Invasive Plant Management, Rocky Mountain Elk Foundation, BLM, WSU, and private landowners released 65,000 *Eustenopus* weevils in Asotin County in 2003 and 70,000 in 2004. Similar releases are expected for 2005.
2. Weed surveys in a cooperative agreement with BLM on properties located in Asotin County.
3. Working with Asotin County Master Gardeners doing invasive weed surveys, a “plant” summer camp for elementary and middle school students, and “Adopt-A-Beach” program on the Snake River.
4. The Weed Board has successfully obtained grants from the Washington State Noxious Weed Control Board, Bonneville Power Administration, the Wild Turkey Federation, the Rocky Mountain Elk Foundation, and the Center for Invasive Plant Management.
5. The Asotin Weed Board works in cooperation with Wallowa Resources to control noxious weeds in the Grande Ronde corridor.
6. In cooperation with Colorado Department of Agriculture, the Asotin Weed Board has released weevils (*Microlarinus sp*) for the control of puncturevine. Weevils were released in the George Creek drainage in 2003 and 2004. Additional releases will be made in 2005.
7. In cooperation with APHIS and Nez Perce Biocontrol, the Asotin Weed Board has introduced a new root weevil (*Cyphocleonus achates*) for the control of diffuse and spotted knapweed. Weevils were released in the Grande Ronde drainage in 2003 and 2004. Additional releases will be made in 2005.
8. Catalogue and inventory of new and existing noxious weed locations. In 2003 and 2004 surveys were concentrated on USFS lands and in the Ten Mile and George Creek drainages. In 2005 surveys are expected to be concentrated in the George Creek/Pintler drainages as well as preliminary surveys in the NW corner of the county. These surveys are conducted by car, four-wheeler, horse back and by foot.
9. Surveying yellow starthistle infestations for the presence of biocontrol agents on private and public lands.

10. Working in cooperation with the Asotin County Sheriff's Department to utilize inmates for control of certain noxious weeds - especially Dalmatian toadflax in the Snake River corridor.
11. Education programs with NRCS, Asotin Elementary School, Asotin High School, Clarkston High School, Asotin County Master Gardeners, Asotin County 4-H, Asotin County Wheatgrowers, and the Asotin County Cattlemen's Association.
12. Coordinating biocontrol releases on yellow starthistle with Nez Perce Tribe, BLM, WDF&W and the Army Corp of Engineers.
13. Confining known populations of Dalmatian toadflax and Rush Skeleton weed through mechanical and chemical means.
14. Cost sharing biocontrols and herbicides with Asotin County Residents.
15. Public awareness programs through WSU Extension bulletins, posters, and educational meetings.
16. Administering complaints from property owners regarding noxious weeds.
17. Working with the USFS to control weeds on properties located in Asotin County.
18. The Weed Board distributes, free of charge, biocontrols for poison hemlock and diffuse knapweed control.

# **NOXIOUS WEEDS**



## Asotin County Noxious Weed Control Board

P.O. Box 881  
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(509) 243-2098

### **Bull Thistle** *Cirsium vulgare*

**Introduction:** In western North America it is the most common rangeland thistle. Although bull thistle is present in 48 states, it is not as much of a problem as Scotch thistle.

**Description:** Bull thistle is a biennial that may reach five feet in height. It forms a rosette of spiny toothed leaves the first year and bolts to maturity the second year. The basal leaves may be up to one foot in length. These leaves are lance shaped and deeply lobed with spines on the tips. The upper surface of the leaves have stiff hairs, the under side is woolly. The upper leaves are similar in shape to the lower leaves, but smaller in size. It has a short fleshy taproot. The stem is many branched with purple, or sometimes white, flowers at the end of the branches. It may bloom from July into September.

**Habitat:** Bull thistle has been introduced from Eurasia as a contaminant of alfalfa seed. It is the most common rangeland thistle, although it is usually not as troublesome as some other biennial thistles. It is highly competitive and may be found along roadsides, meadows, clearcuts, and waste areas. It can be found in grazed but not in ungrazed pastures.

**Mechanical:** Any activity that will cut the stem below the ground will kill this thistle. Hoeing or hand pulling should be successful on small populations as long as it is done before flower production.

**Biological:** Bull thistle is attacked by at least three biocontrols, none of which were its original target. The seedhead weevil, *Rhinocyllus conicus*, uses bull thistle as an alternate host to the *Carduus* genus. A European weevil, *Trichosiromus horridus*, uses bull thistle as an alternative to musk thistle. The only biocontrol that seems to cause significant damage is the seedhead fly, *Urophora stylata*. The fly larvae may consume up to 60% of the developing seeds.

**Fire:** Unknown

**Cultural control:** A good grazing management plan that favors a healthy grass stand will be resistant to bull thistle invasion. Since this thistle readily invades disturbed areas, keeping a healthy rangeland is important.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from “Biology and Management of Noxious Rangeland Weeds”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **2,4-D:**  
Rate; 1.5 to 2.0 lb ai/ac  
Time; apply to rosettes in the spring
- **Clopyralid:** (Transline)  
Rate; 0.13 to 0.5 lb ai/ac  
Time; apply to rosettes in the spring
- **Dicamba:** (Banvel, Clarity, Trooper, Vanquish)  
Rate; 0.5 to 1.0 lb ai/ac  
Time; Apply to rosettes in spring or fall
- **Picloram:** (Tordon)  
Rate; 0.13 to 0.25 lb ai/ac  
Time; Apply to rosettes in spring or fall  
Caution; Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions. Most formulations are restricted use. Soil residues may persist for over three years. Many broadleaf crops are sensitive to picloram. Do not use in diversified crop areas.
- **Chlorsulfuron:** (Glean, Telar)  
Rate; 0.047 lb ai/ac  
Time; Apply from bolting to bud stage - add a nonionic surfactant
- **Metsulfuron:** (Escort, Ally, Cimarron)  
Rate; 0.019 lb ai/ac  
Time; Apply from bolting to bud stage - add a nonionic surfactant

**Distribution:** Bull thistle is scattered throughout Asotin County. It tends to be more common in those disturbed areas that hold more moisture and in recently logged areas. Although it is a common weed, it has not exhibited aggressive mono-cultural tendencies.

**ACNWCB Policy:** In Asotin County, Bull thistle is controlled on a complaint basis when the complainant is an adjoining neighbor.

11/29/05





## Asotin County Noxious Weed Control Board

P.O. Box 881  
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### Canada thistle *Cirsium arvense*

**Description:** Canada thistle produces dense colonies from a system of horizontal roots. It reproduces from seed but spreads mainly by its lateral roots. It is a deep rooted perennial that may grow up to four feet in height. Its deeply lobed leaves are edged with yellow spines. The plant can have many branches. Flowers are generally purple but on occasion can be white. The flowers are unisexual and generally small, about  $\frac{1}{2}$  to  $\frac{3}{4}$  inch in diameter. They form in clusters on the ends of branches. It flowers from July through August. Seeds may remain viable up to 22 years.

Canada thistle management programs should focus on the vegetative expansion of the weed. Targeting female plants can assist in managing seed production.

**Habitat:** Canada thistle can grow in a wide range of soil types and moisture conditions. Although it prefers a clay soil and a precipitation range from 16 to 30 inches. It is found along roadsides, waste areas, streams, gardens and cultivated fields. It can be extremely difficult to control because of its variability in response to herbicides and biocontrols.

Canada thistle is a host to pests that attack agricultural crops. The bean aphid, the stalk borer, the sod-web worm, and the cucumber mosaic virus use the Canada thistle as a host plant.

Treatment programs must take into account that control methods for Canada thistle vary with the growth stage, the season, weather conditions, soil type, and the genotype. A single control method rarely works

**Mechanical:** Canada thistle can withstand hand pulling and digging once or twice a month for many years without achieving control. Cultivation will break up the roots and spread the infestation. A root fragment of  $\frac{1}{2}$  inch, up to two years old, may be capable of regenerating a new plant. However, repeated cultivation every 21 days for four to six months has been successful in some areas. Repeated mowings two to four times per year for one to four

years has also been successful. Seedlings are easy to control with tillage and/or herbicides.

**Biological:** Canada thistle is attacked by seven known biocontrol agents; the seed head weevil, *Larinus planus*, the beetle, *Cassida rubiginosa*, the native painted lady butterfly, *Vanessa cardui*, the crown root weevil, *Baris subsimilis*, the rust, *Puccinia carduorum*, the seed head fly, *Terellia ruficauda*, and another seed head weevil, *Rhinocyllus conicus*. Although several of these agents damage the thistle they do not consistently reduce seed production or root regeneration.

**Fire:** Unknown

**Cultural control:** Its spiny leaves make it unpalatable to livestock. Nitrogen added to fertilizers enhanced thistle growth.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **Amitrole:** (Amitrol)  
Rate; 0.5 lb ai/12 gal water. Broadcast: 4 lb ai/A  
Time; Apply when thistles are 6” tall but before bud  
Remarks; Foliage must be wet  
Caution; Restricted use. Not for use on cropland or grazing lands
- **Chlorsulfuron:** (Telar)  
Rate; 1.125 oz ai/A  
Time; Apply in bud/bloom stage or to fall rosettes  
Remarks; Do not apply to frozen ground. Add nonionic surfactant  
Caution; Avoid drift. Consult label on sandy soils. This herbicide has a residual.
- **Sodium chlorate and/or sodium borate:**  
Rate; 4 lb sodium chlorate ai/sq rod; 15 lb borate ai/sq rod  
Time; Apply to soil any time  
Remarks; This is a temporary soil sterilant. Residual may last 1 to 10 years.
- **Dicamba:** (Banvel or Clarity)  
Rate; 2 lb ae/A  
Time; Apply to actively growing plants  
Remarks; Uptake is through foliage and roots. May mix with glyphosate for fall applications.  
Caution; Avoid drift

- Picloram:** (Tordon)  
 Rate; 1 lb ae/A for boom sprayers: 1 lb ae per 100 gal of water for spot treatments  
 Time; Apply to actively growing thistles  
 Remarks; Uptake is both foliar and through the roots.  
 Caution; Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions. Most formulations are restricted use. Soil residues may persist for over three years. Many broadleaf crops are sensitive to picloram. Do not use in diversified crop areas..
- Glyphosate:**  
 Rate; 1.5 to 2.25 lb ae/A for broadcast  
 Time; Apply to actively growing thistles up to and past bud.  
 Remarks; Wait 3 days before cultivation  
 Caution; This herbicide is non selective
- Clopyralid:** (Transline, Curtail, Stinger)  
 Rate; Consult label  
 Time; Apply to actively growing thistle and before bud  
 Remarks; Wait at least 20 days for translocation before tilling or mowing.  
 Caution; This herbicide has a residual. Consult the label for restrictions.
- Triclopyr + clopyralid:** (Redeem R&P)  
 Rate; 2.5 to 4 pints product/A  
 Time; Apply to actively growing plants to bud  
 Remarks; Add a nonionic surfactant  
 Caution; This herbicide has a residual. Consult label for restrictions.
- Diflufenzopyr + dicamba:** (Overdrive)  
 Rate; 0.26 to 0.35 lb ae/A  
 Time; Apply to spring rosettes  
 Remarks; Add nonionic or methylated seed oil as a surfactant  
 Caution; Avoid drift - will kill legumes

**Distribution:** Canada thistle is a common weed scattered throughout Asotin County. Other than lands in some CRP contracts, populations of Canada thistle are relatively small.

**ACNWCB Policy:** In Asotin County, Canada thistle is controlled on a complaint basis when the complainant is an adjoining neighbor.

11/30/05





## Asotin County Noxious Weed Control Board

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### Dalmatian toadflax *Linaria dalmatica*

**Introduction:** Dalmatian toadflax was originally introduced as an ornamental in the late 1800's. It can be an effective competitor in natural areas or in cultivated fields. It can significantly reduce crop yields once it invades agricultural lands and can displace native plants that are necessary for wildlife species. However, some species of birds and rodents use the seeds.

**Description:** Dalmatian toadflax is a perennial plant with a deep and extensive root system. The tap root may extend more than 3 feet into the ground and produce lateral roots several feet long. It can grow up to 3 feet in height. The thick leaves are alternate and gray-green in color. The yellow flowers are snap-dragon shaped with an orange, bearded throat. It reproduces by seed and underground roots.

**Habitat:** Dalmatian toadflax has a high genetic variability that enables it to grow in a wide variety of environmental conditions. It prefers well-drained coarse soils, ranging from gravel to sandy loams. Toadflax can be found along roadsides, gravel pits, cemeteries, and other disturbed sites. Southern slopes favor toadflax. Once it is established it spreads to relatively undisturbed surrounding areas.

**Mechanical:** The Nature Conservancy conducted a "pull" for Dalmatian toadflax. In deeper soils, they found that the infestations were noticeably reduced after 3 years and after 10 years it could be considered controlled.

Mowing will not reduce toadflax populations because of the large root reserves. Cultivation, however, will control toadflax. Tillage must be done every 7 to 10 days for the first year and at least 4 or 5 cultivations the second year. Inconsistent tillage will spread root fragments and expand the infestation.

**Biological:** There are many biocontrols for Dalmatian toadflax. The toadflax flower-feeding beetle (*Brachypterolus pulicarius*), the toadflax moth (*Calophasia lunula*), the toadflax root-boring moth (*Eteobalea inermiella*), the toadflax seed capsule weevil (*Gymnetron antirrhini*), and the toadflax root-galling weevil (*Gymnetron linariae*) have shown inconsistent results or have not been released in significant numbers to determine success. However,

the toadflax stem weevil (*Mecinus janthinus*) has been released in parts of Washington and Oregon with good success. As of 2005, this weevil is abundant enough to produce nursery sites that can be used to distribute the weevils to other populations of toadflax.

**Fire:** Unknown

**Cultural control:** Dalmatian toadflax is considered unpalatable and may contain a poisonous glucoside. However, sheep will eat it with no apparent side effects. A study in Montana show that sheep can help reduce the density of toadflax.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **Dicamba:** (Banvel or Clarity)  
Rate; 4 to 6 lb ae/A  
Time; Apply in early spring  
Remarks; Repeated applications may be necessary  
Caution; Avoid drift
- **Picloram:** (Tordon)  
Rate; 1 lb ae/A  
Time; Apply before full bloom or in late summer or fall  
Remarks; At suggested rate, will not harm perennial grasses  
Caution; Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions. Most formulations are restricted use. Soil residues may persist for over three years. Many broadleaf crops are sensitive to picloram. Do not use in diversified crop areas.
- **Imazapic:** (Plateau)  
Rate; 0.188 lb ai/A  
Time; Apply in the fall after a hard frost

Remarks; Add methylated seed oil  
Caution; Note crop restrictions

**Distribution:** Dalmatian toadflax has a limited distribution in Asotin County. It is scattered along the Snake River (especially Buffalo Eddy area) and the Grande Ronde River. There are also populations at the P.U.D. in Clarkston, the Port District, the County gravel pit on Cloverland, the USFS and County ROW on Cougar Ridge Road, Field Springs State Park, Pintler Creek and George Creek.

**ACNWCB Policy:** This weed is mandated for eradication throughout Asotin County.

11/30/05





## Asotin County Noxious Weed Control Board

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### Field Bindweed *Convolvulus arvensis*

**Description:** Field bindweed is a mat forming or climbing perennial with stems up to four feet in length. The leaves are alternate with an arrow-head shape. The trumpet-shaped flowers range in color from pink to white. This weed flowers from June until first frost. It reproduces by seeds and rhizomes. The seeds may live for 50 years.

**Habitat:** Field bindweed can adapt to a wide range of environmental conditions. It has been found as high as the 10,000 foot level. It prefers fertile soils that can be either dry or moist. It can be found in cultivated fields, orchards, stream banks, and waste places.

Because field bindweed is widely distributed and has a significant history of causing economic problems for the agricultural industry, it has been called, one of the ten 'world's worst weeds'. The extent of damage to natural areas is not clear. Field bindweed utilizes nutrients that other desirable species could use and has been shown to reduce moisture in the top 2 ½ inches of soil.

New infestations of bindweed are primarily by seed. Seeds are transported by water, birds, animals, humans, and machinery. Seeds can pass through killdeer, quail, ducks, geese, yellowlegs, jays, ravens, mocking birds, and starlings and remain viable.

When working on a management plan for bindweed it is important to realize the extent of the below ground root system that needs to be depleted before the infestation is controlled. The above ground vegetation will regenerate and replace the root carbohydrates without careful monitoring. A multi year approach is necessary.

**Mechanical:** Hoeing or hand-pulling may encourage the germination of dormant seeds or encourage vegetative growth by breaking up root fragments. Mowing has not been successful because plants can be missed and it promotes ground-hugging growth. Repeated cultivation is required for field bindweed control

because plants can regenerate from roots as deep as 5 feet. Studies have shown that bindweed needs to be cultivated every 4 to 14 days to achieve control.

**Biological:** Two gall mites, *Aceria malherbae* and *A. convolvuli*, have been introduced to control field bindweed. Their establishment in SE Washington is unknown.

**Fire:** Unknown

**Cultural control:** Some control of field bindweed has been achieved by planting a heavy over-story vegetation (sorghum, alfalfa, or millet) that reduces light to the weed. Grazing has only had temporary effects upon bindweed populations. Hogs and cattle get a negative reaction from grazing it. Sheep only eat it reluctantly.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **Picloram:** (Tordon)  
Rate; 1 lb ae/A  
Timing; Results are best when applied early bud to full bloom  
Caution; Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions. Most formulations are restricted use. Soil residues may persist for over three years. Many broadleaf crops are sensitive to picloram. Do not use in diversified crop areas.
- **Glyphosate:**  
Rate; 3 to 3.75 lb ae/A  
Timing; Apply at full bloom to early seed set  
Remarks; Repeat treatments may be needed  
Caution; This herbicide is non selective

- **Metsulfuron:** (Escort)  
Rate; 0.6 to 1.2 oz ai/A  
Time; Apply in early bloom  
Remarks; Use nonionic or silicone surfactant  
Caution; Avoid drift. Apply only to noncrop areas
- **2,4-D amine:**  
Rate; 2 to 3 lb ae/A  
Time; Apply at bud stage  
Remarks; Must reapply every year  
Caution; Avoid drift
- **Imazapic:** (Plateau)  
Rate; 0.125 to 0.188 lb ai/A  
Time; Apply after 25% bloom through fall to actively growing weed  
Remarks; Add methylated seed oil  
Caution; Note restrictions on reseeding

**\*Treat** bindweed before it is drought stressed. Use a translocated herbicide, such as glyphosate or a combination of glyphosate and dicamba at the flowering stage of growth. The addition of dicamba gives the treatment some soil residual activity that helps with control of new seedlings. Re-treatments will be necessary to control both established plants and seedlings.

**Distribution:** Field bindweed is a common weed in Asotin County. It can be found along road ROW's, yards, rangelands, and fallow fields. The only extensive population in a natural area is that area west of Rattlenake Grade.

**ACNWCB Policy:** In Asotin County, field bindweed is controlled on a complaint basis when the complainant is an adjoining neighbor.

11/30/05





## Asotin County Noxious Weed Control Board

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

### Hawkweed spp

#### *Hieracium spp*

**Description:** Hawkweeds are members of the chicory tribe of the sunflower family. They are creeping perennials that contain a milky sap. There are eleven highly invasive hawkweeds that have been introduced from Europe. Many of these hybridize with each other and with the native hawkweeds, making identification difficult. For general identification they can be divided into two groups; The invasive hawkweeds have basal lance-shaped leaves, generally leafless stems, and 4-12 leafy stolons. The native hawkweeds lack stolons and have branched, leafy stems.

The orange hawkweed grows to about 12 inches in height with 5-30 bright orange to red-orange flowers that grow  $\frac{1}{2}$  -  $\frac{3}{4}$  inch in diameter. The yellow hawkweeds have a similar growth habit but may reach up to 36 inches in height. Their ability to reproduce sexually or asexually and spread by rhizomes and stolons has been attributed to their quick spread throughout the Northwest in the last 30 years. They can form dense mats with up to 3,200 plants per square meter.

**Habitat:** Hawkweeds prefer full sun to partial shade. They do not do well in dense shade. Hawkweeds out compete native plants where soils are low in nitrogen and organic matter. They can be found in moist, but well drained, coarse textured soils. Hawkweeds can be found along roadsides, meadows, clearcuts, and old pastures. In Asotin County hawkweeds will probably be found in gardens or above 2,500 feet. They are not expected to be a problem for most of Asotin County since they are not found in grasslands or shrub-steppe habitats in their native European ranges. However, considering their ability to hybridize, they may end up adapting to conditions that differ considerably from their original requirements.

In Asotin County, you can expect to find the hawkweeds in the same habitats that oxeye daisy, spotted knapweed, sulfur cinquefoil, and possibly wild carrot are found.

**Mechanical:** None of the hawkweeds seem able to survive in agricultural fields that are tilled annually and replanted. However, digging or disturbing the plants will encourage vegetative growth from stolon or root fragments so it is

very important to continue control measures once began. Mowing may reduce seed production but encourages vegetative growth. Plants that have been mowed tend to send up shorter stems and quickly flower. It is important to bag all cut flowers since they can form viable seeds after they are cut or dug up.

**Biological:** At the present time there are no biocontrols available for release for the hawkweeds. However, a wasp that halts stoloniferous growth is expected to be released in the near future for the control of orange and mouse ear hawkweeds. ...there are 3 other biocontrols that are being investigated; a gall midge that stops flowering and stolon production (not in the U.S. yet); a root feeding hover fly that weakens the plant (not in the U.S. yet); and a rust fungus that has only shown very low impact on the plants.

**Fire:** Unknown

**Cultural control:** Grazing by livestock and rodents encourage the spread of the hawkweeds through stimulated vegetative growth. However, it is unknown how palatable the hawkweeds are and to what extent they are utilized. Studies have shown that leaf protein ranges from 7-11% and flowers contain up to 18% protein.

**Fertilizer:** Nitrogen fertilizer has helped increase the competitive ability of grasses and forbs and actually suppressing hawkweed growth. This is most noticeable when sufficient stands of grass are present and the soils are nitrogen deficient.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2004". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **2,4-D:**  
Rate; 1.43 to 1.9 lb ae/A  
Time; Apply to growing plants before buds form  
Remarks; Retreatment will be necessary  
Caution; This herbicide will kill broadleaf plants. Do not contaminate water sources.
- **Dicamba:** (Banvel or Clarity)  
Rate; 2 lb ae/A (2 qts/A)  
Time; Apply to growing plants before flowering  
Remarks; Retreat as needed not to exceed 2 lb ae/A/season.  
Caution; This herbicide will kill broadleaf plants. Do not contaminate water sources. Check label for livestock restrictions.
- **Picloram:** (Tordon 22K)

Rate; .25 lb ae/A (1 pint/A)

Time; Apply after most basal leaves emerge but before buds form.

Fall treatment effectiveness unknown

Remarks; Follow label restrictions for specific sites.

Caution; This is a restricted use herbicide with many years of soil residual. Follow label guidelines carefully to prevent contamination of water and injury to non target plants.

- **Clopyralid:** (Transline or Stinger)

Rate; .25 to .375 lb ae/A (.66 to 1 pint/A)

Time; Apply after most basal leaves emerge but before buds form.

Fall treatment effectiveness unknown.

Remarks; Follow label restrictions for specific sites.

Caution; This herbicide has a soil residual. Follow label guidelines carefully to prevent contamination of water and injury to non target plants.

- **Clopyralid + 2,4-D:** (Curtail)

Rate; 2 qts/A

Time; Apply after most basal leaves emerge but before buds form.

Fall treatment effectiveness unknown.

Remarks; Follow label restrictions for specific sites.

Caution; This herbicide has a soil residual. Follow label guidelines to prevent water contamination and injury to non target plants.

- **Triclopyr + clopyralid:** (Redeem, Confront)

Rate; 1.5 to 2 pints/A

Timing; Apply when weeds are actively growing.

Remarks; See label for rate of nonionic surfactant and other restrictions.

Caution; This herbicide contains a soil residual. Follow label guidelines carefully to prevent contamination of water and injury to non target plants. Do not apply more than 4 pints/A per year.

**Distribution:** There is a patch (10' x 20') of orange hawkweed close to Field Springs State Park (identified summer 03). A garden in Clarkston has a patch of one of the yellow hawkweeds (identified summer 03). Both of these patches are being controlled.

**ACNWCB Policy:** The Board's policy is eradication of all infestations.

3/3/05



## Asotin County Noxious Weed Control Board

P.O. Box 881  
Asotin, WA 99402  
(509) 243-2098

### Houndstongue *Cynoglossum officinale*

**Description:** Houndstongue may be an annual, biennial or short-lived perennial depending upon environmental conditions. The rosette leaves are hairy, linear and resemble a hound's tongue. The erect stem leaves are hairy, alternate and may be 4-12 inches in length. The tap root is thick and woody. The reddish-purple flowers grow in a "scorpion tail" inflorescence. Flowering occurs in early summer. Reproduction is by seed. The seeds disperse by attaching to animal hair and clothing. It can produce up to 2,000 seeds per plant.

Houndstongue contains pyrrolizidine alkaloids which can be fatal to livestock. Animals usually avoid it when other pasture is available. If bailed in hay, it still retains its toxic properties.

**Habitat:** Houndstongue grows in areas of hot, dry summers and cold winters. It is well adapted to coarse alkaline soils as well as clay soils. It is shade tolerant and may grow in open coniferous forests. It also does well in wetter grasslands. It can be found in pastures and other disturbed habitats. It can grow up to 9,000 feet in elevation.

**Mechanical:** Digging below the root crown will kill the plants. Clipping flowering stocks, prior to flowering, will control seed production. Cultivation in early spring gives good control. Mowing prior to flowering effectively controls seed production.

**Biological:** A root weevil, *Mogulones cruciger*, and a root beetle, *Longitarsus quadriguttatus*, have both been released in British Columbia. *Mogulones* is reportedly causing noticeable declines in houndstongue populations. The *Longitarsus* populations have been slower to build. These two biocontrols have not been released in the United States because of concerns by U.S. Fish and Wildlife service about the possible impacts that they may have on an endangered plant species in Texas.

**Fire:** Unknown

**Cultural control:** It has a low palatability. However, it becomes more palatable when dried and is baled in hay. It contains pyrrolizidine alkaloids which are fatal. Cattle and horses have died from eating it. Wildlife poisonings are unknown.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **2,4-D LV ester:**  
Rate; 2 lb ae/A  
Time; Early spring/before bloom  
Remarks; spray before seed set  
Caution; Avoid drift; grapes and tomatoes are among crops extremely sensitive to 2,4-D
- **Metsulfuron:** (Escort or Cimarron)  
Rate; 0.6 oz ai/A  
Time; Apply to actively growing plants  
Caution; Application should be to noncrop sites.
- **Picloram:** (Tordon)  
Rate; 0.5 lb.ae/A  
Time; Apply to actively growing plants  
Remarks; Reportedly gives fair to good results  
Caution; Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray

pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions. Most formulations are restricted use. Soil residues may persist for over three years. Many broadleaf crops are sensitive to picloram. Do not use in diversified crop areas.

- **Imazapic:** (Plateau)  
Rate; 0.125 to 0.188 lb/A  
Time; Apply to actively growing plants  
Remarks; Increase concentration for larger rosettes, decrease for smaller rosettes.  
Caution; Note special rotational restrictions on label.

**Distribution:** Houndstongue is scattered throughout Asotin County from 800' to 3,600'. It grows in a wide variety of habitats from shaded forests to dry brushy draws to damp riparian areas.

**ACNWCB Policy:** In Asotin County, houndstongue is controlled on a complaint basis when the complainant is an adjoining neighbor.

11/30/05





## Asotin County Noxious Weed Control Board

P.O. Box 881  
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### **Jointed goatgrass** *Aegilops cylindrical*

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**Description:** Jointed goatgrass has many stems and can grow 15 to 30 inches tall. The leaves are alternate and simple. The spike is cylindrical and is more than 10 times as long as wide. The seed heads break into individual segments at maturity.

**Habitat:** Jointed goatgrass grows along the margins of wheat fields as well as into the fields themselves. It will hybridize with wheat. It also grows in waste areas, alfalfa fields, and pastures.

Jointed goatgrass is usually recognized as a serious weed in winter wheat. However, it is spreading into disturbed rangelands. It is found in all major winter wheat producing areas in the United States

**Mechanical:** Jointed goatgrass can be effectively cultivated out, if alternative crops are rotated into the fields.

**Biological:** There are no known biological controls for this weed.

**Fire:** Unknown

**Cultural control:** Unknown

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **Glyphosate:**  
Rate; 0.38 to 0.75 lb ae/A  
Time; Apply to actively growing plants  
Remarks; for spot use or along field edges  
Caution; This is a non selective herbicide
- **Sulfometuron:** (Oust)  
Rate; 1 to 1.5 oz ai/A  
Time; Apply in fall or late winter before goatgrass is 3” tall  
Remarks; Desirable grasses may be affected. Consult the label.  
Caution; For use on non cropland. Avoid drift
- **Imazapic:** (Plateau)  
Rate; 0.063 to 0.188 lb/A  
Time; Apply preemergent  
Remarks; Use lower rates for dry climates and low litter.  
Selective for most native grasses. Higher rates may suppress some grasses.

**\*No herbicides** are available that can selectively control jointed goatgrass in winter wheat; spring tillage and general grass killers provide excellent control.

**Distribution:** Jointed goatgrass is found in cultivated fields, along road ROW’s and in disturbed areas. Very little goatgrass has invaded rangelands.

**ACNWCB Policy:** In Asotin County, jointed goatgrass is controlled on a complaint basis when the complainant is an adjoining neighbor.

11/30/05



## Asotin County Noxious Weed Control Board

P.O. Box 881  
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(509) 243-2098

### **Kochia** *Kochia scoparia*

**Description:** This escaped ornamental may reach six feet in height. This weed is characterized by its many branches and red-tinged appearance. Its lance-shaped leaves are ½ to 2 inches in length and are fringed with soft hairs. The upper leaf surfaces are usually smooth with the under surface covered with soft hairs. The small green flowers are inconspicuous and form in axillary clusters. It may flower from July to October. Seeds are dispersed when the mature plant breaks off in the autumn and tumbles in the wind.

**Habitat:** Kochia is drought tolerant and has a wide tolerance of soil types. It is even adapted to salty soils. It is most often found in rangelands, along roadsides, ditchbanks, cultivated fields, and waste areas. In Asotin County it is most commonly found in wintering cattle feeding areas. Although it is grazed, it may contain toxic levels of nitrates.

Kochia has been sold as an ornamental because of its reddish fall colors. It is sometimes marketed under the name “burning bush”. Although *K scoparia* can be a problem in crop lands, *K prostrata* is being planted as a “green strip” plant and as a forage plant.

**Mechanical:** Digging or pulling young plants will control a small population.

**Biological:** There are no known agents at this time

**Fire:** Unknown

**Cultural control:** Early spring tillage gives good control of kochia. Mowing the plants just prior to flowering is an effective way to reduce seed production.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank. Some biotypes of Kochia have been reported to be resistant to triazine, 2,4-D, and dicamba.

- **difluzoxypyr + dicamba** (Overdrive):  
Rate; 0.175 to 0.35 lb ae/A  
Time; Application time should be to actively growing weeds.  
Remarks; A nonionic surfactant or methylated seed oil improves control.  
Caution; Cannot plant any crop within 30 days of application.  
Can not apply more than 10 oz herbicide per season.
- **fluroxypyr** (Vista):  
Rate; 0.125 to 0.25 lb ae/A  
Time; Application time should be to actively growing weeds.  
Remarks; Apply 5 gal/A (or more), but do not exceed 40 gal/A.  
Grasses are tolerant of fluroxypy.  
Caution; Do not apply when drift is possible. Do not apply more than 0.25 lb ae/A.

**Distribution:** Although kochia is scattered throughout the lower elevations of Asotin County, it is found in dense populations where cattle are concentrated in the winter time and along old roads and banks.

**ACNWCB Policy:** In Asotin County, kochia is controlled on a complaint basis when the complainant is an adjoining neighbor.

11/30/05



## Asotin County Noxious Weed Control Board

P.O. Box 881  
Asotin, WA 99402  
(509) 243-2098

### Leafy Spurge *Euphorbia escula L.*

**Description:** Leafy Spurge is an aggressive perennial weed that grows up to 3 feet in height. The alternate leaves are yellowish-green until they turn yellow or red with the first frost. The inconspicuous flowers are subtended by showy yellowish-green bracts in the early spring. Seeds can be shot 20 feet or more when the ripened capsules explode. Seed maturation often coincides with hay harvest, thus aiding in its spread. Seeds can remain viable up to 8 years and emerge from a buried depth of 6 inches. In addition to a massive network of small lateral roots, the taproot may reach 21 feet in depth. The leaves, stems, and roots all exude a white latex sap that can cause severe dermatitis in some individuals.

**Habitat:** Leafy spurge can reduce the carrying capacity of pasture and rangeland by 75% or more. It is responsible for lost wildlife habitat and associated recreational activities. It survives under a wide variety of

conditions. Because it begins growth in early spring it out competes native vegetation.

**Mechanical:** The plant has numerous stem buds that cover the thick roots. Mechanical injury stimulates growth of these buds. Additionally, small root fragments can themselves produce new plants. The high food reserves stored in the roots, enables the plant to recover quickly from mechanical and chemical injury. Roots systems can regenerate even if removed to a depth of 3 feet. However, intensive cultivation for many years has successfully reduced populations in some areas.

**Biological:** There are numerous species of flea beetles that have been released for the control of leafy spurge. Some states have had excellent results. Wallowa Resources and APHIS (Spokane) reports that although flea beetles are numerous on their spurge, no reduction in weed population has been noticed.

**Fire:** Not effective because of the deep root system.

**Cultural Control:** Planting competitive vegetation in addition to herbicide treatments has been successful in some situations. It is unpalatable and toxic to cattle and horses. Sheep and goats are not affected by the toxins and are being used to reduce leafy spurge's populations especially in Montana, Wyoming, and Idaho. Before using sheep and goats in any weed reduction program, it is recommended that the land owner/manager contact WDF&W for updated safeguards regarding the potential for passing along pasturella bacteria to bighorn sheep.

**Fertilizer:** Herbicide application followed by fertilizers to encourage the growth of forage grasses has been successful in some areas.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2003". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

Analysis of leafy spurge plants has shown that it is not a single species, but a collection of closely related variants. This variability affects response to herbicides and biocontrols. Herbicide programs must be continued for years to eliminate this weed.

**Distribution:** There are numerous patches along the Grande Ronde River. There are four patches along the Snake River.

**ACNWCB Policy:** This weed is mandated for eradication throughout Asotin County.

12/30/03



**Asotin County Noxious Weed Control Board**  
P.O. Box 881  
Asotin, WA 99402  
(509) 243-2098

## **Mediterranean sage** *Salvia aethiopsis L.*

**Description:** This aromatic biennial member of the mint family can grow 2 to 3 feet in height. The first year of growth produces a distinctive, large showy rosette of grayish/bluish woolly leaves. During the second season, the plant produces multiple branches with stems ending in clusters of white flowers. The lower leaves have petioles and are coarsely toothed. Upper leaves are smaller and clasp the stem. As the plant matures, the pubescence will shed off and show the green leaf beneath. Thousands of seeds are dispersed as the dry plant breaks off from its base and tumbles with the wind.

**Habitat:** Mediterranean sage is unpalatable to grazing animals and degrades rangeland by reducing forb and grass production. It will invade shrub steppe rangelands as well as the adjoining understory of ponderosa pine forests. It favors disturbed sites initially, but can spread into other areas after

establishment. Mediterranean sage rarely grows in crop lands but is generally found in pastures, roadsides, and rangelands.

**Mechanical:** Plants cut 2-3" below the crown prevent resprouting. Mowing is effective only if repeated many times throughout the season.

**Biological:** *Phrydiuchus tau*, a root feeding weevil, was introduced in 1969. The larvae feed on the root crown thus reducing or even preventing flower production. This weevil, in addition to planting competitive vegetation, has reduced populations of Mediterranean sage in Oregon and Idaho.

**Fire:** Unknown

**Cultural control:** Tillage is an effective tool in fields and pastures.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from "Biology and Management of Noxious Rangeland Weeds". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

\***Picloram:** (Tordon)

Rate; 0.375 to 0.5 lb ai/A

Time; Spring spraying suppresses rosette growth longer than fall spraying. Fall spraying allows competitive vegetation to recover.

Remarks: Because of the thick pubescence, a surfactant will need to be added to the herbicide mixture.

Caution; Most formulations are restricted-use herbicides. Do not contaminate water. Do not use in diversified crop areas. Potatoes, beans, tomatoes, grapes, and many other broadleaf crops are sensitive to this herbicide.

\***Clopyralid:** (Transline)

Rate; 0.5 lb ae/A

Remarks; Best results when mixed with 2,4-D; 1.5 to 2 lb ae/A

**Distribution:** The only known infestation of this sage in Asotin County is along Meyer's Ridge Road on WDF&W lands. The Wildlife Department bagged all adult plants during the summer 2004, and sprayed the area during the fall '04 and spring '05.

**ACNWCB Policy:** The Board's policy is eradication of all infestations.

5/10/05



**Asotin County Noxious Weed Control Board**

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

## **Myrtle Spurge**

*Euphorbia myrsinites*

**Description:** Myrtle spurge is a perennial forb with fleshy stems spreading low to the ground. Mature plants spread up to 18 inches across and 4-6 inches in height. Leaves grow alternately in spirals around the stems. The plant is blue-green in color. Although the flowers are inconspicuous they are subtended by a showy yellowish green bract that is easy to spot. The leaves, stems and roots all exude a milky latex sap. This sap can cause severe skin irritation in some individuals and may cause blindness if it comes in contact with your eyes. It causes nausea, vomiting, and diarrhea when ingested. This plant is popular as a deer proof, xeriscape plant. It reproduces by seed and plant parts. In Asotin County it is unclear whether the remote infestations have been started by seed or plant parts.

**Habitat:** Myrtle spurge is popular as a hardy ornamental that does well in dry, sandy soils. It can grow in well-drained to moist soils with either full or partial sun.

**Mechanical:** Small infestations can be dug or pulled. This procedure must be continued for many years before the plant can be eradicated.

**Biological:** None known

**Fire:** Unknown

**Cultural control:**

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2003”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

**\*\*2,4-D or dicamba at 1 lb/acre, and glyphosate at 1.5 lb. Ai/acre should provide adequate control. Application of herbicides should be done selectively to avoid damage to non-target species. The best time to treat myrtle spurge is during late fall.**

**Distribution:** Myrtle spurge is common in gardens in Asotin County. There are three infestations along the Snake River and one on Asotin Creek Road.

**ACNWCB Policy:** Myrtle spurge is mandated for eradication; 1) between the Snake River and the Snake River Road 2) between the Grande Ronde River and the Grande Ronde River Road 3) within 60 feet of Asotin Creek 4) in any area that is not an actively cultivated garden.

1/30/04



## **Asotin County Noxious Weed Control Board**

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

### **Oxeye daisy**

*Chrysanthemum leucanthemum*

**Description:** Oxeye daisy is a perennial that reproduces from rhizomatous roots as well as from seeds. Stems that lay along the ground will also take root. The weed will grow 10 to 24 inches in height. Lower leaves may be five inches long

with crenated or lobed margins. Upper leaves are smaller with toothed edges. The white flowers, 1 - 2 ½ inches across, are solitary on the ends of stems.

**Habitat:** Oxeye daisy can be found on moister sites but tolerates drought conditions. It can be found in forest meadows, roadsides, and waste places. Because of its small seeds, it needs bare ground in order to establish.

Oxeye daisy was brought to the United States as a contaminant in seed. It was also introduced as an ornamental. It is often added to wild flower mixes.

**Mechanical:** Cultivation easily controls oxeye daisy because of its shallow root system. Mowing may eliminate seed production, but stimulate new plant growth.

**Biological:** There are currently no biocontrols available for this weed.

**Fire:** Unknown

**Cultural Control:** Horses, sheep and goats will graze oxeye daisy, but cows and pigs will ignore it.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from “Biology and Management of Noxious Rangeland Weeds”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

\* Studies in the early 1970’s found that applying nitrogen fertilizer to oxeye daisy infestations was as effective as using 2 lb/A 2,4-D or 2 oz/A of picloram.

**Distribution:** There are two areas with significant populations; the headwaters of Tenmile and an area approximately 2 miles south of Anatone.

**ACNWCB Policy:** Landowners have reported that this weed has been present for 40 + years with out significantly expanding its range. The Board’s policy at this time is to monitor the infestations.

11/30/05



**Asotin County Noxious Weed Control Board**

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

**Poison Hemlock**  
*Conium maculatum*

**Description:** Poison hemlock is an impressive biennial sometimes reaching 8 feet in height. During its first year it produces a basal rosette of leaves. Its hollow stem has distinctive purple blotches. The lower leaves clasp the stem while the upper leaves have short stalks. The leaves are divided 3 to 4 times giving them a lacey appearance. When crushed, the leaves and stems exude an unpleasant odor. The white flowers lack sepals and grow in an umbel cluster. The seed bank of poison hemlock can be severely reduced after 3 years of control.

**Habitat:** Although poison hemlock grows well in damp areas with deep soils, it also tolerates poorly-drained soils. It can be found bordering pastures and croplands, along ditch and stream banks, and in waste areas. In SE Washington it has been found on dry, north-facing slopes with fairly deep soils. Poison hemlock may be a significant problem with the first cutting of alfalfa. It may also contaminate grain seeds when it invades croplands. It is more often a problem with grazing animals when it invades pastures and meadows and may be ingested in early spring or with harvested hay.

Poison hemlock is a highly toxic weed that is successful at out-competing native vegetation in riparian habitats. It quickly colonizes disturbed sites and forms monocultures that exclude native species, both plant and animal.

**Mechanical:** Hand pulling or hoeing can control a small infestation.

**Biological:** The hemlock moth (*Agonopterix alstroemeriana*) was first introduced into the United States in 1973. The larvae consume leaves, flowers, and the developing seeds. A heavily infested plant will not produce seeds. In many areas of Asotin County the first flush of poison hemlock is generally defoliated. In June 2005, later maturing larvae were introduced with the hope that they will attack the second flush of hemlock.

**Fire:** Burning would probably not be successful because of the lack of fuel in those areas.

**Cultural control:** Repeated cultivation controls hemlock. Repeated mowing has been shown to be effective at reducing plant vigor and reducing seed production.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Biology and Management of Noxious Rangeland Weeds" written by Roger Sheley and Janet Petroff. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for at least three years until the seed bank is depleted.

- **2,4-D:**

Rate; 1.0 to 2.0 lb ae/acre

Time; early spring

Remarks; A wetting agent increases the efficiency

Caution; The 2,4-D may make the hemlock more appealing to livestock, but still does not change the toxicity.

- **Glyphosate:**

Rate; 1.0 lb ae/acre

Time; early spring

Remarks; Cool temperatures reduce the effectiveness of the herbicide.

**Recommended treatment:** Since there is a legal setback for certain herbicides along waterways, care needs to be taken in any riparian area. 2,4-D gives good control of hemlock when sprayed in the early spring. The *Agonopterix* moth should be released in those areas that cannot be sprayed.

**Distribution:** The Grande Ronde River corridor has the densest colonies in Asotin County. Small infestations are found throughout the county except in the Blue Mountain area.

**ACNWCB Policy:** The Weed Office distributes biocontrols free of charge and encourages herbicide control in areas of dense concentrations.





## Asotin County Noxious Weed Control Board

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

### **Puncturevine** *Tribulus terrestris*

**Description:** Puncturevine is a mat forming annual. Each stem may reach up to 6 feet in length. The leaves are hairy, opposite and divided into 4 to 8 pairs of leaflets. Flowers are yellow, up to ½ inch in diameter with 5 petals. Fruits are well armed with sharp thorns. The burs are made up of 5 sections that break apart at maturity. These burs allow the seeds to hitchhike over long distances on vehicles and animals. The seeds may remain dormant in the soil for 5 years or more.

**Habitat:** Puncturevine is adaptable to a wide range of conditions. Although it prefers light-textured soils, it will grow on just about any soil type. It will grow in irrigated pastures as well as roadsides, orchards, agricultural areas, and waste areas. It requires high temperatures for germination and growth.

**Mechanical:** Since puncturevine is an annual it may be effectively controlled by digging below the root crown.

**Biological:** In the 1960's, California introduced two weevils (*Microlarinus lypriformis* and *Microlarinus lareynii*) to control puncturevine. Together both weevils have provided good control in warm winter areas of the state. Asotin County obtained "cold hardy" weevils from Colorado Department of Agriculture in 2003 and 2004. A combination of two hundred weevils were released each year in the George Creek drainage.

**Fire:** Unknown

**Cultural control:** Repeated cultivation is an effective control.

**Fertilizer:** Control of some weeds benefit from the application of fertilizers to augment the growth of competitive vegetation. It is unknown if this method is beneficial in the control of puncturevine.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2004". These recommendations are not intended to be a complete resource guide.

Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

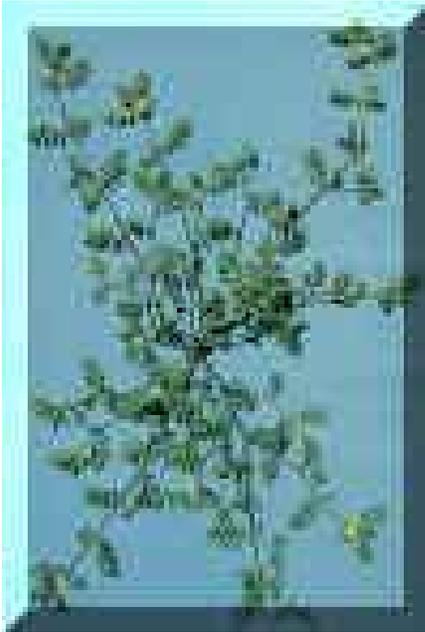
- **2,4-D LV ester:**  
Rate; 2 lb ae/A in 10 to 20 gal of water  
Time; Apply every 3 weeks during growing season or when new seedlings appear.
- **Picloram:** (Tordon)  
According to the findings of the Washington State Noxious Weed Control Board, “Picloram applied as a pre-emergence spray, can give adequate, but not complete control.”  
Caution; Most formulations are restricted-use herbicides. Do not contaminate water. Do not use in diversified crop areas. Potatoes, beans, tomatoes, grapes, and many other broadleaf crops are sensitive.
- **Chlorsulfuron:** (Telar)  
Rate; 1 oz ai/A (1.5 oz product/A)  
Time; Apply late fall or late winter preemergence to growth.  
Remarks; Needs moisture to activate.  
Caution; See label for tank-cleaning instructions. Do not use on sensitive crops or allow spray to drift onto sensitive crops.
- **Bromacil + diuron:** (Krovar I DF)  
Rate; 8 lb ai/A (10 lb product/A)  
Time; Apply preemergent  
Remarks; Rain is needed to activate this herbicide  
Caution; This is a nonselective herbicide. Do not apply where desirable plant roots extend.
- **Norflurazon** (Solicam)  
Rate; Refer to label  
Time; Apply fall to spring before emergence  
Remarks; Adjust rates depending on soil texture and organic matter. Existing weeds should be removed prior to herbicide application.
- **MSMA:** (Bueno or Trans-Vert)  
Rate; 2 to 4 lb ai/A  
Time; Apply after puncturevine emerges. Best results in seedling stage of growth.  
Remarks; This herbicide is more active above 70 degrees F. May need respraying after rain.  
Caution; Keep liquid or dust away from eyes. Wash eyes immediately with water if exposed.

**Distribution:** Puncturevine is widely distributed in the lower elevations of Asotin County. Surveys indicate that it is being spread along roadways by vehicles and ATV's. Although it has not been found above 1500', it will

eventually spread throughout the county unless individuals are attentive to the cleaning of their vehicles when driving in weed infested areas.

**ACNWCB Policy:** Puncturevine is one of the weeds that the Asotin County Public Works targets in their roadside spray program. The Weed Board handles puncturevine on a complaint basis. However, the Weed Board conducts surveys to assess the expansion of this weed and alerts landowners/managers in areas where new infestations are found.

4/19/05





## Asotin County Noxious Weed Control Board

P.O. Box 881

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### Rush Skeletonweed *Chondrilla juncea L.*

**Description:** Rush skeletonweed is a member of the sunflower family. It ranges in height from 1 to 4 feet. It has an extensive root system including a tap root that can reach 8 or more feet in depth. Skeletonweed over-winters as a basal rosette that closely resembles a dandelion. The mature plant is a nearly leafless stem with 1/2 " yellow flowers growing in the leaf axils or at the branch tips. Large plants can produce up to 1,500 flower heads with 20,000 seeds. Each seed has its own pappus, which can carry on wind currents up to 20 miles. The plant produces a white latex when cut.

Although there are hundreds of biotypes (differentiated by leaf, height, & flower characteristics), only three are found in the Pacific Northwest. These biotypes (Spokane, Post Falls, Banks) differ in height, flowering time, and reactions to herbicides and biocontrols.

**Habitat:** Rush skeletonweed prefers sandy to gravelly soils in well drained areas, but will grow in shallow soil situations. It can grow in areas that vary in precipitation from 10 to 40 inches per year. It survives in regions that receive little or no frost to areas that have subzero winter temperatures. In Asotin County, areas of highest risk are road sides and old flood plains.

**Mechanical:** Mechanical injury to the roots stimulates shoot development from any of the lateral or main roots. Once established in crop lands, cultivation is the major factor in the spread of this weed. Less than 1/2 inch root fragment can produce a new plant. Root fragments are viable until they dry out. The wiry stems and the latex sap gum up harvesting equipment. In Australia, where this weed is wide spread, wheat production has been reduced up to 80% with whole fields being converted to rangeland. Small infestations can be pulled by hand if done 3 to 4 times a year for 5 years or more.

**Biological:** There are two biocontrols present in Asotin County. The gall mite (*Eriophyes chondrillae*) is present on most populations. It is easy to identify since it appears to be a cancerous type of growth on the stems. An infestation of the mites reduces root carbohydrate reserves, hinders rosette formation, stunts growth, decreases or can completely prevent seed production, and can

kill first year plants. In Asotin County the results are inconsistent. The gall midge (*Cystiphora schmidtii*) is also present. Purple blotches on the leaves and stems indicate the presence of these midges. The midges damage the leaf and stem tissues, causing premature yellowing, and desiccation. Rosettes may actually die and seeds have reduced viability. There is a native wasp that preys on the midge and has limited its success. A new root moth (*Bradyrrhoa gilveolella*) has had good success in Montana. The larvae actually kill the plants through destruction of the root tissue. Nez Perce Biocontrol Center in Lapwai and University of Idaho are attempting to establish the moth in this area.

**Fire:** Unknown

**Cultural Control:** Cows, horses, and deer will graze skeletonweed. Continual grazing can stop seed production. However, rotational grazing has been shown to increase plant density. Studies have shown that using both competitive beneficial forage and biocontrols in combination results in some measurable control.

**Fertilizer:** Nitrogen fertilizer will increase the competitiveness of beneficial plants and reduce the density of skeletonweed, although the size of the individual plants increases.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2003". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank. Skeletonweed is considered tolerant to herbicides. The different biotypes of the weed respond differently to the same herbicides. Herbicide control requires an aggressive follow-up program with repeated applications. Application of residual herbicides are most successful when applied between the time in the late fall (after the first frost) and before bolting in the spring. Spring applications of 2,4-D will suppress growth for the year, but will not kill the plant.

- **Picloram** (Tordon)
  - \* Rate: 1 lb ae/A
  - \* Time: Late fall to early spring
  - \* Remarks: Re-treatment is necessary
  - \* Caution: Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants

were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions.

\* **2,4-D or MCPA**

\* Rate: 2 lb. as/A

\* Time: Apply to rosettes in spring before bolting

\* Remarks: Prevents above ground growth but does not affect root growth.

\* Caution: Must repeat treatment

\* **Clopyralid** (Transline or Stinger)

\* Rate: 0.25 to 0.375 lb ae/A (0.66 to 1 pint/A)

\* Time: Apply from fall frost to spring bolting

\* Remarks: Consult label for site restrictions

\* Caution: This is a residual herbicide. There are several crop families that are sensitive to its effects. Consult label for crop rotation restrictions before using. Must repeat treatments.

**Distribution:** There are small scattered populations throughout Asotin County.

**ACNWCB Policy:** This species is mandated for eradication throughout Asotin County.

12/30/03





## Asotin County Noxious Weed Control Board

P.O. Box 881  
Asotin, WA 99402  
(509) 243-2098

### Russian knapweed *Acroptilon repens*

**Description:** Russian knapweed is a member of the sunflower family. This invasive perennial is characterized by its extensive root system and relatively low seed production. This knapweed can form dense patches with 100-300 shoots per square meter produced primarily by root buds. Russian knapweed produces an allelopathic compound that hinders the growth of competing vegetation. In Asotin County rosettes may be produced in the late fall. Young plants are covered with short gray hair. The leaves vary from a deeply lobed linear shape on the lower plant to an oblong toothed shape on the upper stem. The flower heads are urn-shaped with pink to purple petals. The major means of seed dispersal is probably contaminated hay.

**Habitat:** Initially, Russian knapweed invades clearcuts, waste places, pastures, ditches, riverbanks, and roadsides. After establishment it invades other areas with a healthy vegetation cover. Russian knapweed will invade any crop. It has been shown to reduce grain yields by 28-75% and the fresh weight of corn by 64-88%. Russian knapweed reduces rangeland production. It does especially well in clay soils, but is not limited by soil type. Excess moisture and excess shading seem to limit its range.

**Mechanical:** Pulling, cutting, and discing two to three times per growing season will reduce the vigor of the stand but it has not been shown to eliminate the infestation.

**Biological:** There are two biological controls that have been approved by the USDA. Both of these need APHIS permits to transport them between states. The Russian knapweed gall nematode (*Subanguina picridis*) causes galls to form on stems, leaves and root collars causing a reduction in seed production and plant growth. This nematode does best in areas with wet winters and springs. The Russian knapweed mite (*Aceria acroptiloni*) forms galls on the leaves and in the flower heads of both Russian and diffuse knapweeds. A heavily galled

plant may die. Neither of these biological controls is known to be present in Asotin County.

**Fire:** Although there are no studies that are available to show the effects of burning on Russian knapweed, it may be assumed that since most burns will not affect the roots and that this knapweed is an excellent competitor in disturbed soils, that a burn may actually increase the size of the infestation.

**Cultural Control:** Because of its bitter taste, Russian knapweed is avoided by most grazing animals. It causes “chewing disease” in horses. This disease does not seem to affect cattle, sheep, or goats.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years. Please contact the Weed Office for updated information on herbicide controls.

- **Picloram** (Tordon)
  - Rate: 1 lb ae/A
  - Time: Late spring or during flower stem elongation
  - Caution: Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions.
- **Glyphosate** (Roundup, etc)
  - \* Rate: 3 lb. ae/A
  - \* Time: Apply to actively growing plants when most are in the bud stage.
  - \* Remarks: Glyphosate kills grasses and competing vegetation in addition to knapweed plants.
- \* **Cloyralid** (Transline)

- \* Rate: 0.25 to 0.5 lb ae/A (0.66 to 1.33 pints/A) see label
  - \* Time: Apply up to the bud stage
  - \* Remarks: See label for registered sites. See Redeem label for additional application possibilities.
  - \* Caution: See label for restrictions. Some crops may be injured up to 4 years after application.
- \* **Imazapic** (Plateau)
- \* Rate: 0.188 lb ai/A
  - \* Time: Apply in fall or early winter after plant has senesced.
  - \* Remarks: Use 1 quart/A methylated seed oil as the adjuvant. Selective to most native grasses.
  - \* Caution: Note crop rotation restrictions.

**Distribution:** Russian knapweed is found in scattered populations between the County landfill and the County Public Works shop on Critchfield.

**ACNWCB Policy:** This species has been established in its approximate locations for many years. The rate of spread seems to be slow. The ACNWCB is working with landowners to reduce the size of the present infestations especially when it is bordering neighboring lands.

1/24/05





## Asotin County Noxious Weed Control Board

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

### Saltcedar

*Tamarix ramosissima*

**Description:** These shrubby trees, growing up to 30 ' in height, were originally introduced in the late 1800's to be used as windbreaks, erosion control, and garden ornamentals. Their small cedar-like leaves are gray-green in color, but turn yellow and drop in the winter. The saltcedar trees produce a dramatic pink bloom in April and May. Thousands of flowers cover the trees and can produce over half million seeds. These small seeds have a tuft of hair on one end that enables them to float on water or float long distances by wind. The short-lived seeds must germinate within months after dispersal or they will die. The deep taproot and extensive horizontal root system, makes this tree difficult to kill. They may grow as much as a foot a month.

**Habitat:** Having escaped from cultivation the saltcedars have become aggressive invaders along streams and other riparian areas. The trees bring up salts through the roots and exude these salts through the leaves. The salts kill native vegetation. Even after the trees are killed, it may take years before other vegetation moves into this sterile area. Saltcedars increase fire frequency, dry up springs, and reduce wildlife habitat by eliminating the food source and cover from native species. The saltcedar tolerates drought, heat, cold, salinity, fire and flooding. Because of saltcedar's ability to alter stream morphology and endanger water sources it has received significant attention from government agencies and environmental organizations.

**Mechanical:** Mature saltcedars have been pulled up by their roots with heavy equipment. Young plants can be hand pulled. Regrowth and seedlings then need to be sprayed with a systemic herbicide.

**Biological:** *Diorhabda elongate* (Saltcedar leaf beetle) beetles were originally released in 1999. They can produce up to two generations per year. A combination of larvae and adult feeding, defoliates the saltcedars. Research facilities expect to be able to distribute these beetles by 2005.

**Fire:** The BLM has successfully burned infestations of saltcedar, then followed up regrowth with systemic herbicides.

**Cultural control:** Damage to riparian areas has increased the invasion of saltcedar. When native vegetation is stressed by drought, saltcedars may also become established.

**Fertilizer:** Unknown

**Chemical:** Since these weeds grow close to water sources, the applicator must follow label directions carefully. Systemic herbicides have been shown to kill saltcedars. Yearly inspections are needed to insure total eradication.

**Distribution:** This invasive tree has not been found in Asotin County. However, a noninvasive genotype (that looks identical to the invasive genotype) is present in Asotin County. This noninvasive genotype was commonly planted as an ornamental 30 to 50 years ago. Other than the fact that this tree is obviously noninvasive, its other characteristic that distinguishes it from the invasive genotype is its shorter bloom time. These noninvasive trees can be seen in Clarkston gardens and less commonly in Asotin gardens. There is one tree approximately 4 miles south of Asotin on the Snake River, one tree approximately 8 miles west of Asotin on Asotin Creek, and one tree along Hwy 12 on Army Corp land. All known trees have been mapped (thanks to Jerry Lindstrom's 4-H group).

**ACNWCB Policy:** Any new trees are mandated for eradication throughout Asotin County.

4/19/05





## Asotin County Noxious Weed Control Board

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

# Scotch Thistle

## *Onopordum acanthium*

**Description:** Scotch thistle is an impressive weed that can reach 8 feet in height and 6 feet in width. A thick mat of hairs give the plant a grayish appearance. The leaves can be 2 feet long and 1 foot across. Spines are present on the leaves and stems. The plant blooms in mid summer with flower heads reaching 2 inches in diameter. Flower colors range from dark pink to lavender. Although it is typically a biennial, it can sometimes grow as an annual. A rosette (up to 12 inches across) is produced the first year with a 12 inch fleshy tap root. The plant bolts early in its second year. Up to 40,000 seeds can be produced on a single plant. They are dispersed by wind, water, humans, livestock and wildlife.

**Habitat:** Scotch thistle prefers light, well-drained sandy or stony soils. It is found in areas with dry summers. Infestations can be found in areas ranging from wet meadows and pastures to sagebrush communities. This weed is associated with waste places, riparian areas, dry pastures, fields, and rangelands.

**Mechanical:** Small infestations can be eradicated by cutting off the plant below the soil. Mowing or cutting can be productive if done just before flowering or in the early stages of flowering. However, if the plants are cut too late, the seeds will mature in the fallen seed head. Mowing or cutting too early will only delay flowering, not stop it.

**Biological:** There are no biological agents that have been released for control of this plant. However, *Larinus planus*, *Rhincyllus conicus*, and/or *Trichosirocalus horridus* may be present. Surveys are needed to confirm their presence. In Canada and Australia testing is being done on various weevils and flies.

**Cultural control:** In tests, it was found that perennial grasses, esp ryegrass, was more competitive than legume species.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2003”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **2,4-D:**
  - Rate; 1.5 to 2 lb ae/A
  - Time; Spring or fall
  - Remarks; Use fall treatments to control rosettes. Use spring treatments before bolting.
  - Caution; Legumes are injured or eliminated at these rates. Avoid drift to sensitive crops.
- **Dicamba** (Banvel or Clarity)
  - Rate; 0.5 to 1 lb ae/A
  - Time; Spring or fall
  - Remarks; Use fall treatments to control rosettes. In the spring, use before flowers stalk elongation.
  - Caution; Dicamba may remain in the soil for 12 to 18 months. Grass tolerates dicamba at these rates.
- **Picloram** (Tordon)
  - Rate; 0.25 lb ae/A
  - Time; Apply in the fall
  - Caution; Most formulations are restricted use. Soil residues may persist for over three years. Many broadleaf crops are sensitive to picloram. Do not use in diversified crop areas.
- **Cholorsulfuron** (Telar)
  - Rate; 0.75 oz ai/A (1 oz product/A)
  - Time; Apply to actively growing weeds.
  - Remarks; Do not spray to frozen ground. Maintain constant agitation while mixing. Add 0.25% (by volume) of nonionic surfactant.
  - Avoid contact with sensitive crops. Avoid powdery, dry, or sandy soils if rain is unlikely
- **Metsulfuron** (Escort or Cimarron)
  - Rate; 0.6 oz ai/A (1 oz/A Escort) or 0.12 to 0.45 oz ai/A (0.2 to 0.75 oz/A Cimarron)
  - \* Time; Apply postemergence to actively growing plants
  - \* Remarks; Using a nonionic or silicone surfactant increases effectiveness. Certain biotypes are more sensitive than others.
  - \* Caution; Apply only to pasture rangeland, and noncrop areas.
- \* **Clopyralid + 2,4-D** (Curtail)
  - \* Rate; 1 to 5 quarts/A
  - \* Time; Apply to actively growing weeds.

- \* Remarks; Rates differ for CRP applications. Consult label for specific directions. Wait at least 20 days after application before cultivation to allow for translocation.
- \* Consult label for crop rotation restrictions before using product. Several crops may be injured up to 4 years after application. Restrictions apply - see label.
- \* **Clopyralid** (Stinger, Transline)
  - \* Rate; 0.09 to 0.375 lb ae/A (0.25 to 1 pint/A). Labeled rates vary with crops.
  - \* Time; Up to the bud stage of thistles
  - \* Remarks; Best if applied to actively growing weeds. See label for registered sites.
  - \* Caution; Consult label for crop rotation restrictions before using products. Several crops may be injured up to 4 years after application.
- \* **Triclopyr + clopyralid** (Redeem R&P)
  - \* Rate; 1.5 to 2 pints product/A
  - \* Time; Apply to actively growing thistle from rosette to early bolt stage.
  - \* Remarks; Add a nonionic surfactant at the surfactant manufacturer's recommended rate. Apply in at least 10 gal/A water by ground.
  - \* Caution; Do not apply more than 4 pints product/A per year. Do not allow drift to desirable vegetation. Note label restrictions.

**Distribution:** Scotch thistle is found throughout Asotin County.

**ACNWCB Policy:** In Asotin County, Scotch thistle is controlled on a complaint basis when the complainant is an adjoining neighbor. On parcels less than 10 acres, Scotch thistle will be considered controlled when no seed production occurs. On parcels greater than 10 acres, a written complaint must be filed with the Asotin Weed Board. The Board will consider each complaint on an individual basis.

1/30/04





## Asotin County Noxious Weed Control Board

P.O. Box 881

Asotin, WA 99402

(509) 243-2098

### Spotted knapweed and Diffuse knapweed *Centaurea maculosa: Centaurea diffusa*

**Caution:** Knapweed species may contain a cancer causing compound. Anyone working with these plants should wear protective gloves and avoid getting sap into open cuts or abrasions.

**Description:** The knapweeds are members of the sunflower family. Spotted knapweed is a biennial or short-lived perennial. It ranges in height from 1 to 3 feet. However, in some of the deeper soils of Asotin County it may reach 4 feet or more. It may have one or more stems. The leaves vary from entire to pinnate and range up to 6 inches in length. The ray flowers are generally pinkish-purple but may be cream colored. The bracts under the flowers generally have dark tips. The flower heads are larger and more globular shaped than diffuse knapweed.

Diffuse knapweed behaves as an annual, biennial or short-lived perennial. It may remain in a rosette stage from one to several years. It generally ranges from 1 to 2 feet in height, but in some of the deeper soils in Asotin County it may reach 3 feet or more. This knapweed has numerous branches and the leaves are pinnately divided. The ray flowers are generally white but occasionally pinkish or purplish. The flower heads are more cylindrical than spotted knapweed and have distinctive comb-like teeth along the upper ends of the bracts.

**Habitat:** Spotted knapweed is an introduced native of Europe and probably entered North America as a contaminant of alfalfa seed. It can grow in disturbed areas, gravel pits, roadsides, power line corridors, and along railroads. It does best in light-textured soils that receive summer rains. Those areas at highest risk in Asotin County are those with Ponderosa pine and Douglas fir. However, other areas have reported spotted knapweed invading habitats dominated by bunchgrasses.

Diffuse knapweed is thought to have been introduced into Washington in the early 1900's from hybrid alfalfa seed from Germany. It grows in rangelands, and generally in areas not suitable for cultivation. It prefers open habitats in semi-arid conditions. It does best on light, dry, porous soils.

Both spotted and diffuse knapweeds contain chemicals that inhibit other plant growth. This allows pure knapweed stands to develop.

**Mechanical:** Mowing reduces seed production if mowed within 10 days after flower heads open. If mowing takes place in the early flowering stages, the plants usually have enough energy to produce new flowers. Deep plowing may be effective since seeds do not germinate below 3 cm of soil.

**Biological:** There are several biological controls present in Asotin County. The Broad-nosed seed head weevil (*Bangasternus fausti*), the Lesser knapweed flower weevil (*Larinus minutus*) and the knapweed peacock fly (*Chaetorellia acrolophi*) reduce seed production and are found on most populations of knapweed. The bronze knapweed root-borer (*Sphenoptera jugoslavica*) reduces the vigor of the host plant by depleting root carbohydrates and sometimes stopping rosette growth. Thirty knapweed root weevils (*Cyphocleonus achates*) were introduced in Asotin County in 2003 on the Grande Ronde River. Three releases of thirty were released in 2004; one on the Grande Ronde, one in the headwaters of George Creek (Ramsden), and one on the north fork of Asotin Creek. In 2004, four releases of the blunt knapweed flower weevil (*Larinus obtusus*) were made: one close to Field Springs State Park; one in the headwaters of George Creek (Ramsden); two on the north fork of Asotin Creek. There may be other biocontrols present.

**Fire:** Burning success has been mixed. Annual burns have reduced populations 5-90%. The intensity of the burn seems to be more of a deciding factor rather than frequency. Single burns may actually worsen the infestations.

**Cultural Control:** Because of the chemical, cnicin, the knapweeds have low palatability and thus grazing is usually not a preferred management tool.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2004". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank. Application of residual herbicides are most successful when applied between the time in the late fall (after the first frost) and before bolting in the spring.

- **Picloram** (Tordon)
  - \* Rate: 0.25 to 0.5 lb ae/A
  - \* Time: Apply in late spring before or during flower stem elongation
  - \* Remarks: Treatment made in bud stage may not prevent seed production

\* Caution: Do not apply on or near susceptible crops or desirable plants. Label includes buffer zone restrictions, air temperature limits, and grazing restrictions. Do not contaminate water or where surface water from treated areas can run off to adjacent cropland. Do not apply to inner bank or bottom of irrigation ditches. Do not apply to snow or frozen ground. Do not allow grazing in areas where poisonous plants were sprayed until plants have died, herbicide may increase palatability. Do not spray pastures if the forage legume component is desired. Do not move treated soil. Do not transfer livestock onto crop areas for at least 7 days after grazing on land treated with picloram. See label for other restrictions.

\* **2.4-D**

\* Rate: 1 to 2 lb ae/A

\* Time: Apply at the early stage of flower stem elongation (late April to early May)

\* Remarks: Treatment will control only plants emerged at time of spraying

\* Caution: Avoid drift to sensitive plants

\* **Clopyralid** (Transline or Stinger)

\* Rate: 0.25 to 0.5 lb ae/A (0.66 to 1.33 pints/A)

\* Time: Up to the bud stage

\* Remarks: Results are best if applied to actively growing weeds. See labels for registered sites.

\* Caution: This is a residual herbicide. There are several crop families that are sensitive to its effects. Consult label for crop rotation restrictions before using.

**Distribution:** At the present time spotted knapweed is confined to the Ponderosa pine and Douglas fir areas. In Asotin County the Umatilla National Forest has infestations at Lost Cabin Ridge, Cook Ridge, Dry Camp, and the North Fork of Asotin Creek. There are also scattered infestations along the Rattlesnake Grade. There is one infestation in the Cloverland area that is in a roadside bunchgrass community. This area possibly receives more moisture from roadside runoff.

Diffuse knapweed populations are highest along the Grande Ronde River and the Port District in the City of Clarkston. There are scattered plants throughout the County. Generally, the spotted knapweed requires greater moisture than the diffuse knapweed. There are at least two locations where diffuse knapweed is found in what is more typical spotted knapweed habitat. One of these is close to Anatone, the other is the North Fork of Asotin Creek.

**ACNWCB Policy:** The Weed Board is working with land owners and managers to control spotted knapweed on their properties through herbicide use. The Board is recommending biocontrols for populations of diffuse knapweed. The Board is distributing biocontrols free of charge as they become available.

1/24/05



Spotted knapweed



Diffuse knapweed



## Asotin County Noxious Weed Control Board

P.O. Box 881  
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### St. Johnswort *Hypericum perforatum*

**Description:** St Johnswort is a perennial plant, woody at the base, reaching up to three feet in height. It can propagate by horizontal stems or runners. It has a deep taproot. The plant has numerous sessile leaves that are opposite with entire margins. The inch long leaves are covered with numerous transparent dots. The small bright yellow flowers are borne in flat-topped cymes. It flowers during June and July.

**Habitat:** St Johnswort is typically found in areas with rainfall between 15 and 30 inches. It does not tolerate shade but grows well on sunny, southerly slopes. It prefers gravelly or sandy soils but can grow on clay soils. It can invade degraded or healthy rangelands. It can also be found growing along roads, in orchards, and in forest meadows. It contains the toxin, hypericin, which causes dermatitis in light skinned animals.

St Johnswort is a pest in the temperate regions of the world. It was first introduced in the United States in the late 1700's. It was originally introduced for its medicinal value as well as its ornamental value. It invades disturbed areas as well as pristine areas. Following the release of biocontrol agents 50 + years ago, populations have declined up to 99%.

**Mechanical:** Digging and pulling has been used successfully on small populations. The remaining roots may produce more plants so this procedure often has to be done many times. The pulled plants need to be removed from the site to prevent vegetative regrowth. St Johnswort can be effectively controlled with intensive cultivation. Mowing close to flowering will reduce seed production but does not kill the plant.

**Biological:** There are five biocontrol agents for St Johnswort. The St. Johnswort root borer (*Agrilus hyperici*), the St Johnswort moth (*Aplocera plagiata*) and the St Johnswort gall midge (*Zeuxidiplosis giardi*) have all been successful to varying degrees, but have basically been inconsistent in their control. The two species of Klamathweed beetles (*Chrysolina spp*) have

successfully controlled this plant in many areas. The determining factor in its success is the presence of fall rains needed to stimulate mating and egg laying.

**Fire:** Unknown

**Cultural:** In Australia, studies found that cultivation followed by fertilization and then reseeding with perennial grasses helped to control St. Johnswort. Burning has been shown to increase the density of the plant.

**Fertilizer:** See above

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2004”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank.

- **2,4-D:**  
Rate; 2 lb ae/A in 50 gal of water  
Time; Apply to new seedlings or before flowering  
Remarks; More than one application needed  
Caution; Avoid drift
- **Metsulfuron:** (Escort or Cimarron)  
Rate; 0.6 oz ai/A  
Time; Apply postemergence  
Remarks; Add a surfactant to increase success  
Caution; Apply only to noncrop areas.

**Distribution:** St Johnswort is scattered throughout Asotin County. A few meadows in the Blue Mts are the only areas that contain dense populations of this weed. The general population has been increasing for a number of years. This may be due to dry fall conditions that hamper the biocontrol agents effectiveness or the natural fluctuation of “predator/prey”.

**ACNWCB Policy:** The Board’s policy at this time is to monitor the weed.  
11/30/05





## Asotin County Noxious Weed Control Board

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### Sulfur cinquefoil *Potentilla recta L.*

**Description:** This member of the rose family is a perennial species with a woody rootstock. There are presently studies underway to age this plant by the growth rings on the root. The leafy, hairy stems can reach one to three feet in height. The palmate leaves can have 5 to 7 toothed leaflets. The plant is spread primarily by seeds attaching to animals. Because of its high tannin content, it has low grazing palatability. This species is easily confused with native species of cinquefoil.

- 1) The native species are a greener color - sulfur cinquefoil looks yellowish-green.
- 2) The native species have mostly basal leaves - sulfur cinquefoil has numerous stem leaves.
- 3) The native species look silvery on the back of the leaves - sulfur cinquefoil looks yellowish-green.
- 4) The native species flowers are yellow - sulfur cinquefoil flowers are cream colored.
- 5) The native species has about 20 stamens - sulfur cinquefoil has 25 or more stamens

**Habitat:** Sulfur cinquefoil can be found in a wide variety of environmental conditions. Although somewhat sensitive to shade, it can be found in open forest and logged areas, grasslands, shrubby areas, roadsides, waste areas, and abandoned fields.

**Mechanical:** Annual cultivation will control sulfur cinquefoil. Chopping and hand pulling has been effective if the root crown is removed. Because of the large root mass, mowing has not been effective.

**Biological:** Because of the close relationship between sulfur cinquefoil, strawberries and native cinquefoils, there is concern that biocontrol agents may attack nontarget plants. A root moth and seed head weevil are currently being studied, but releases are still ten years, or more, away.

**Fire:** Early spring fires may favor native species over sulfur cinquefoil. However, fall fires have been shown to benefit sulfur cinquefoil over the native species. Fire intensity plays a large part in survival of plant parts.

**Cultural control:** Whenever cattle are pastured in areas with sulfur cinquefoil, there is danger that they will carry the seeds to uninfected areas. Goats are the only known animals that will select for sulfur cinquefoil.

**Fertilizer:** Unknown

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the “Pacific Northwest Weed Management Handbook - 2003”. These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank. Please contact the Weed Office for updated information on herbicide controls.

**Distribution:** Any areas in Asotin County that have Ponderosa pine trees also have a high risk of having sulfur cinquefoil. Cinquefoil has also been found on north facing slopes and deep draws.

**ACNWCB Policy:** The Weed Office is currently surveying the existing stands of cinquefoil. Rocky Mountain Elk Foundation and Center for Invasive Plant Management are providing funds to cost share herbicides for its control.  
12/30/03





## Asotin County Noxious Weed Control Board

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# Whitetop

## *Cardaria draba*, *Cardaria pubescens*

**Description:** Whitetop is a perennial that grows up to 3 feet tall. The leaves are grayish-green, shaped like arrowheads and clasp the stem. The flowers are white and appear in April and May along the Snake River and as late as early June in the higher elevations of the county. The flowers form a flat-topped appearance and are easily recognized from a distance. Plants typically do not flower the first year. One flowering stem of hoary cress can produce up to 850 mature pods. Later in the year, the distinctive inflated seed pods give a positive identification. Seeds are dispersed by water, vehicles, farm machinery, and contaminated hay and crop seeds. The seeds germinate in the fall after the first rains. Although seed production is somewhat important, the aggressive nature and stubborn persistence of these weeds is due to an extensive system of vertical and lateral roots. The tap root can reach up to 18 feet in depth, enabling it to withstand droughts and cold winter climates. The roots produce buds that can then produce new plants. Root fragments also generate new plants.

**Habitat:** This weed initially invades disturbed open sites, fields, grain and vegetable crops, especially irrigated crops (such as alfalfa), orchards, roadsides, and ditches. They are also found in riparian-upland areas and are somewhat salt and alkaline tolerant, but generally not shade tolerant. They readily establish in disturbed areas in range and wildlands and are favored during years of above average precipitation. Invasion potential is greater under heavily grazed conditions or other disturbances.

**Mechanical:** Mechanical control is extremely variable. Therefore, any mechanical control must be aggressively maintained for several years. Mowing alone is generally ineffective for control, as rapid regrowth occurs. The most effective timing for mowing is when plants are in the late bud to early flowering stage. This will also reduce seed production, but may also decrease competitive vegetation. Cultivation to a depth of 6 inches repeated throughout the season of emergence, for a period of 2 to 4 years, must be maintained for eradication.

**Biological:** Four agents are currently being investigated for their potential: *Ceutorhynchus cardariae* (a weevil that forms galls on leaf stalks), *Ceutorhynchus merkli* (a shoot-mining weevil), *Ceutorhynchus turbatus* (a seed-feeding weevil), and *Psylliodes wrasei* (a shoot-mining fly). None of these agents are currently available.

**Fire:** Due to the emergence of new shoots from root buds it is unlikely that burning will offer control of whitetop.

**Cultural control:** Although sheep have been used to control whitetop in a moderate and continuous grazing program, a complete management program has not been developed. Cattle will graze them; however, dairy animals may produce milk with objectionable taste and odor. Legume crops, such as alfalfa, are important competitors for moisture and sunlight. However, one of the prime areas for new invasions is thinning stands of alfalfa. Rotation to winter annual grains allow cultivation and herbicide applications during the fallow season.

**Fertilizer:** Nitrogen fertilizer has been shown to enhance grass production and slow whitetop invasions.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2003". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to obtain long term control. Picloram has not proven effective on whitetop control.

- **2,4-D:**
  - Rate; 2 to 3 lb ae/A in noncropland and 1 lb ae/A as a selective treatment
  - Time; Apply early in the growth stage
  - Remarks; When possible use 2,4-D before plowing fields in spring. Respray in fall if new growth appears.
  - Caution; Avoid drift to sensitive crops.
- **Amitrole:** (Amitrol)
  - Rate; 3 lb ai/50 gal water for spot treatment
  - Time; Apply before first blossoms open
  - Remarks; Foliage must be thoroughly wet
  - Caution; This is a restricted use herbicide. It is not registered for crop or grazing lands.
- **Chlorsulfuron:** (Telar)
  - Rate; 0.75 oz ai/A (1 oz/A of 75% ai Telar)

- Time; Apply at prebloom to bloom growth stage or to rosettes in fall.
- Remarks; Using an 80% ai surfactant increases effectiveness.
- Caution; Apply only to noncrop sites
- **Metsulfuron:** (Escort or Cimarron)
  - Rate; 0.6 oz ai/A (1 oz/A) of the 60% ai Escort or 0.45 oz ai/A (0.75/A) Cimarron
  - Time; Apply at prebloom to bloom growth stage or to rosettes in fall.
  - Remarks; Using a nonionic or silicone surfactant increases effectiveness.
  - Caution; Apply only to pasture, rangeland, and noncrop sites.

**Distribution:** Whitetop is a new invader to Asotin County. There is approximately one acre of known infestations. The infestations are scattered in the Buffalo Eddy, Montgomery Ridge and Cloverland areas.

**ACNWCB Policy:** These two species are mandated for eradication throughout Asotin County

12/30/03

1/25/05 *update on biological controls*





## Asotin County Noxious Weed Control Board

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### Yellow Starthistle *Centaurea solstitialis*

**Description:** Yellow starthistle is a winter annual that germinates in the fall when moisture conditions and temperatures are optimal. This member of the sunflower family can reach three feet or more in height. The yellow thistle-like flower has yellowish spines around the flower head. Fine woolly hairs cover the stem and leaves giving it a dull green appearance. Leaf bases extending downward give a winged appearance to the stems. Up to 150,000 seeds may be produced in a single plant. Two types of seeds develop in the flower head. The plumed seeds are dispersed by wind or other disturbances. Plumeless seeds remain in the seed heads until the heads fall apart. These seeds typically grow close to the mother plant. The taproot extends further into the soil than other annuals and often out-competes spring plants for moisture and nutrients.

**Habitat:** Yellow starthistle can germinate in semiarid and subhumid rangelands. The plants do especially well in deep silt loams on south slopes. However, it can also grow in shallow rocky soils. This adaptability allows it to grow on poor quality rangeland, edges of cropland, idle farmlands and pastures, roadsides, railways, and recreational areas. Although the majority of yellow star seeds germinate in the fall, they may germinate at any time during the year.

**Mechanical:** Since yellow starthistle is an annual, handgrubbing and tilling is an effective method of control. The prevention of seed production for three years will dramatically reduce the infestation. (90% of the seeds remain viable for 3 years, but the remaining 10% may remain viable for up to 15 years.)

**Biological:** *Chaetorellia australis* (peacock fly) can produce up to three generations per year. The larvae feed on the developing seeds. Although this fly is found throughout the county, it is more numerous closer to Asotin and Clarkston possibly as a result of an earlier blooming alternative host, bachelor button (*Centaurea cyanus*) being present. *Urophora sirunaseva* (gall fly) is present in smaller numbers than *Chaetorellia*. *Urophora* larvae not only feed on the developing seeds, but the gall formation in the seed heads reduce the density of the seeds. *Bangasternus orientalis* (bud weevil) was released in the

late 80's. The feeding larvae can reduce seed production by 50-60%. It's presence is readily noticed by small black specks (eggs) on the stems. It is wide spread throughout the county. *Larinus curtus* (flower weevil) has been introduced in the county but has not established itself except at higher elevations. The Weed Board is using grant monies to disperse more of these weevils. Nez Perce Biocontrol has found that this weevil can be an effective agent in Idaho. *Eustenopus villosus* (hairy weevil) was introduced into Asotin County in the late 90's. This weevil is our most promising biocontrol. Adult feeding destroys a high percentage of developing buds. Additionally, larvae feeding can reduce seed production by 100%. This aggressive weevil will out-compete *Bangasternus*. The Weed Board cost shares this weevil up to \$200.

**Fire:** Control fires have been used in California. Tentative results point to multiple mid summer fires being successful at reducing yellow star infestations.

**Cultural control:** Yellow starthistle infestations have been reduced by careful grazing practices. Crude protein ranges from about 10% at the rosette stage to about 12% at bolting stage. It is sensitive to competition for light, therefore grasses and other forbs can limit plant density. Well timed grazing by goats, sheep and cattle can reduce weed density. Grazing during the bolting stage (prior to spine production) favors grasses. Since yellow star generally recovers from grazing, it is necessary to regraze the area 1 to 4 times at about two week intervals. Grazing in the rosette stage favors yellow star development. Because of the possibility of domestic sheep and goats transmitting the *Pasturella* bacteria to bighorn sheep, WDF&W should be contacted prior to using any multi species grazing management in order to incorporate any safe guards.

**Fertilizer:** Control of some weeds benefit from the application of fertilizers to augment the growth of competitive vegetation. BLM (offices in Cottonwood, ID) has had negative success with nitrogen fertilizer treatments. However, in other studies the addition of phosphorus has shown promise.

**Chemical:** These chemical recommendations are for noncropland areas and are summarized from the "Pacific Northwest Weed Management Handbook - 2003". These recommendations are not intended to be a complete resource guide. Label requirements need to be followed for restrictions, concentrations, timing, and nontarget interactions. Chemical control can be effective, but must be maintained for several years to exhaust the seed bank. In the rosette stage, yellow starthistle can be killed with herbicides. Plants in the flowering and seed production stages tend to be more resistant. Resistance to picloram has been reported.

- **2,4-D LV ester:**  
Rate; 1 lb ae/A in 50 gal of water  
Time; Apply before flowering

Remarks; Foliage must be thoroughly wet.

Caution; Avoid drift to sensitive crops

- **Picloram:** (Tordon)

Rate; 0.25 to 0.375 lb ae/A

Time; Apply in spring when plants are still in rosettes through bud formation.

Remarks; At the suggested rate, treatment will not damage perennial grasses. Treatment at the bud stage can reduce weed seed viability by 95-100% in the year of application.

Caution; Most formulations are restricted-use herbicides. Do not contaminate water. Do not use in diversified crop areas.

Potatoes, beans, tomatoes, grapes, and many other broadleaf crops are sensitive.

- **Chlorsulfuron:** (Telar)

Rate; 1.125 oz ai/A (1.5 oz product/A)

Time; For best results apply to young, actively growing weeds.

Remarks; For suppression only. Do not apply to frozen ground.

Constantly agitate while mixing in spray solution. Add 0.25% v/v nonionic surfactant to the spray mixture. Apply with ground equipment in at least 10 gal/A carrier. Rate selection is based on weed species and soil texture.

Caution; See label for tank-cleaning instructions. Do not use on sensitive crops or allow spray to drift onto sensitive crops.

- **Clopyralid + 2,4-D amine:** (Curtail)

Rate; 1 to 5 quarts/A Curtail

Time; Apply after majority of rosettes have emerged but before bud formation.

Remarks; Lower rate for in-crop cereal grain application, higher rates for fallow, postharvest, and CRP applications. See label for specifics. With CRP applications, for established grass only.

Apply in enough total spray volume to ensure good coverage.

Caution; Consult label for crop rotation restrictions before using product. Several crops may be injured up to 4 years after application.

- **Triclopyr + clopyralid:** (Redeem R&P)

Rate; 1.5 to 2.5 pints product/A

Time; Apply from rosette to early bolt stage when starthistle is actively growing.

Remarks; Add a nonionic surfactant at the surfactant manufacturer's recommended rate. Apply in at least 10 gal/A water by ground.

Caution; Do not apply more than 4 pints product/A per year. Do not allow drift to desirable vegetation. Note label restrictions on overseeding or reseeding.

- **Clopyralid:** (Stinger or Transline)

Rate; 0.09 to 0.375 lb/A (0.25 to 1 pint/A). Labeled rates vary with crops.

Time; Apply after majority of rosettes have emerged but before bud formation.

Remarks; Best applied to actively growing weeds. See labels for registered sites.

Caution; Consult label for crop rotation restrictions before using these products. Several crops may be injured up to 4 years after application.

**Distribution:** Except in the southwest corner, yellow starthistle is found on rangeland throughout Asotin County.

**ACNWCB Policy:** Yellow starthistle will be controlled on a complaint basis County wide when the complainant is an adjoining neighbor. On parcels less than 10 acres, yellow star will be considered controlled when no seed production occurs. On parcels greater than 10 acres, a written complaint must be filed with the Asotin County Weed Board. The Board will consider each complaint on an individual basis.

1/6/04



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