



**Idaho's Noxious Weeds**  
**2011 CONTROL GUIDELINES**  
*Noncrop and Rangeland Sites*

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These guidelines are not recommendations. If site-specific help is needed, land managers should contact a licensed consultant. The label will describe legal use of the herbicide for pasture, rights-of-way, rangeland, etc., and it will document restrictions on reentry intervals and subsequent haying or grazing restrictions.



**These guidelines were prepared and published independently from the handbook *Idaho's Noxious Weeds*. Neither the Idaho State Department of Agriculture nor any of its federal partners played any role in the preparation or publication of these guidelines.**

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## Preface to 2011 control guidelines

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The Idaho noxious weed law now contains three categories of weeds: (1) those that are thought not to be in Idaho or, if here, recently established (statewide early detection and rapid response), (2) those not widely distributed in the state that must be controlled or eradicated in some areas (statewide control), and (3) those distributed throughout the state that must be contained or controlled to prevent further economic and environmental damage (statewide containment).

The control guidelines include control using herbicides, cultural methods, and biological control for noncropland and rangeland sites. These guidelines are updated annually.

The **Pacific Northwest Weed Management Handbook** contains more detailed information on most of the weed species encountered in Idaho. Find it at: <http://pnwhandbooks.org/weed/>

For **biological control agent collection site locations**, contact the Nez Perce Biocontrol Center at (208) 843-9374 or Mark Schwarzlaender at (208) 885-9319.

## Legend

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oz/A	=	ounces per acre of product
lb/A	=	pounds per acre of product
pt/A	=	pints per acre of product
qt/A	=	quarts per acre of product
gal/A	=	gallons per acre
oz ai/A	=	ounces active ingredient per acre
oz ae/A	=	ounces acid equivalent per acre
lb ai/A	=	pounds active ingredient per acre
lb ae/A	=	pounds acid equivalent per acre
ai/A	=	active ingredient per acre
ae/A	=	acid equivalent per acre
mg	=	milligrams
L	=	liters
ml	=	milliliters
v/v	=	by volume

## Black henbane

*Hyoscyamus niger*

### Chemical control

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**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Tordon 22K(picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Before bloom

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 0.125 to 0.375 lb ae/A dicamba

**Timing:** Rosette stage

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply one 20-oz pack of Cimarron X-tra for each 10 acres

**Timing:** Actively growing plants

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.5 oz/A Part A and 2 pt/A Part B Cimarron Max;  
use a surfactant

**Timing:** Actively growing plants

## Bohemian knotweed

*Polygonum x bohemicum*

### Chemical control

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**Herbicide:** Garlon 4 (triclopyr)

**Description:** Apply 1% v/v Garlon 4 to foliage

**Timing:** Actively growing plants

(cont. on page 6)

## Bohemian knotweed (*cont.*)

### Chemical control (*cont.*)

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**Herbicide:** Habitat or Arsenal (imazapyr)

**Description:** Apply 0.5 to 1 lb/A or 1% v/v Habitat adjacent to water or Arsenal away from water

**Timing:** Mid-summer after seed head forms

**Herbicide:** Aquamaster or Rodeo (glyphosate)

**Description:** Hollow-stem injection—Inject 5 ml Aquamaster or Rodeo per stem between 2nd and 3rd internode

**Timing:** Actively growing plants

## Brazilian elodea

*Egeria densa*

### Chemical control

---

**Herbicide:** Sonar (fluridone)

**Description:** Maintain a concentration of 45 to 90 ppb for 30 to 90 days

**Timing:** Early in the season as plants begin growth and oxygen levels are higher. Applying early reduces the chance of aquatic animals facing an oxygen deficit when dying plants use oxygen as they decompose. Applications within  $\frac{1}{4}$  mile of a potable water intake cannot exceed 20 ppm

**Herbicide:** Nautique (copper)

**Description:** Apply 0.5 to 1 ppm copper depending on water depth and infestation density. Treat  $\frac{1}{3}$  of the surface in 10-day intervals to prevent depletion of dissolved oxygen. No swimming or irrigation restrictions

**Timing:** Sunny mornings when water temperature is above 60°F

## Brazilian elodea (*cont.*)

### Chemical control (*cont.*)

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**Herbicide:** Reward (diquat)

**Description:** Apply 0.185 to 0.74 gal/surface A Reward (0.5 ppm is effective in clear water, but with clay sediment turbidity, 1 to 2 ppm is effective)

**Timing:** When water temperatures rise above 50°F

## Buffalobur

*Solanum rostratum*

### Chemical control

---

**Herbicide:** 2,4-D + Banvel, Clarity (dicamba)

**Description:** Apply 1.6 lb ae/A 2,4-D and 0.5 lb ai/A dicamba

**Timing:** Seedling stage

**Herbicide:** Tordon 22K (picloram) + 2,4-D

**Description:** Apply 1 to 2 pt/A Tordon 22K + 0.5 lb ae/A 2,4-D

**Timing:** Seedling stage

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.5 oz/A Part A and 2 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Actively growing plants

## Canada thistle

*Cirsium arvense*

### Chemical control

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**Herbicide:** Redeem R&P (clopyralid + triclopyr)

**Description:** Apply 3 to 4 pt/A Redeem R&P

**Timing:** Rosette to bud stages

(*cont. on page 8*)

For biological control contacts see page 4—7

## Canada thistle (*cont.*)

### Chemical control (*cont.*)

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**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.66 to 1.33 pt/A Stinger or Transline

**Timing:** Up to bud stage

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone; use a surfactant

**Timing:** In spring to plants in the prebud growth stage; in fall to plant regrowth

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2 to 3.3 oz/A Chaparral

**Timing:** Bud to early flower stage; fall prior to frost

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P; use a surfactant under adverse conditions

**Timing:** Actively growing plants

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 pt/A Tordon 22K

**Timing:** Before budding

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply 0.5 oz/A Cimarron X-tra for suppression

**Timing:** Rosette through flowering stage but prior to seed development

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.25 oz/A Part A and 1 pt/A Part B Cimarron Max, use a surfactant (for suppression only)

**Timing:** In spring to plants in the rosette to early bolt stage



## Canada thistle (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Fall rosettes or when plants are at the bud to bloom stages

**Herbicide:** glyphosate

**Description:** Apply 1.50 to 2.25 lb ae/A glyphosate

**Timing:** Actively growing plants at bud stage

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 2 lb ae/A dicamba

**Timing:** Actively growing plants

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 oz/A Overdrive

**Timing:** Actively growing plants

### Biological control

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**Insect:** Stem weevil (*Hadroplontus litura*)

**Description:** Adults feed on leaf and stem tissue. The greatest damage is caused by larvae feeding within the stems. Impact is mostly indirect, providing access into shoots for harmful pathogens. Attack rates are mostly low (>10%) and their impact undetermined. Collect weevils as adults.

**Redistribution:** April 1 to May 1. Limited collection sites.

**Insect:** Gall fly (*Urophora cardui*)

**Description:** Larvae form galls in the stems that act as metabolic sinks, using plant resources to maintain the gall and nourish the larvae and reducing the plant's vigor. Seed production of attacked main stems is greatly reduced but galled side stems can still produce seeds.

Documented attack rates are low (>25%) but recently increasing.

Current attack levels provide little control. Collect galls in early spring.

**Redistribution:** February 15 to April 15. Limited collection sites.

# Common crupina

*Crupina vulgaris*

## Chemical control

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**Herbicide:** Transline or Stinger (clopyralid)

**Description:** Apply 5.6 oz/A Transline or Stinger

**Timing:** Split—fall then spring

**Herbicide:** Escort XP (metsulfuron)

**Description:** 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 3 to 3.3 oz/A Chaparral

**Timing:** Actively growing plants

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.5 oz/A Part A and 2 pt/A Part B Cimarron Max;  
use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply 2 oz/A Cimarron X-tra

**Timing:** Actively growing plants

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Fall or late winter

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba) + 2,4-D

**Description:** Apply 0.5 lb ae/A dicamba + 1 lb ae/A 2,4-D

**Timing:** Actively growing plants

## Common or European frogbit

*Hydrocharis morsus-ranae*

### Chemical control

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**Herbicide:** No herbicides are labeled for control

## Common reed

*Phragmites australis*

### Chemical control

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**Herbicide:** Habitat (imazapyr)

**Description:** Apply 4 to 6 pt/A Habitat; ensure 100% coverage

**Timing:** Actively growing, green foliage after full leaf elongation

**Herbicide:** Clearcast (imazamox)

**Description:** Apply 4 pt/A Clearcast as broadcast spray or 1-2% v/v as spot spray; use 1 qt/A MSO

**Timing:** Late vegetative stages up to killing frost

**Herbicide:** Rodeo, Aquamaster or Touchdown Pro (glyphosate)

**Description:** Apply 2 to 3 lb ae/A glyphosate as broadcast spray or 0.75% v/v as backpack spray

**Timing:** Actively growing plants through full bloom stage

# Curlyleaf pondweed

*Potamogeton crispus*

## Chemical control

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**Herbicide:** Reward (diquat)

**Description:** Apply 2 qt/A Reward (0.5% solution) with aquatic wetting agent (0.25-1% v/v); see label for special regulations

**Timing:** Actively growing plants

**Herbicide:** Aquathol K (endothall dipotassium salt)

**Description:** Apply 0.5 to 1.5 ppm of Aquathol K (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction); rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish

**Timing:** Actively growing plants

**Herbicide:** Hydrothol 191 (endothall mono salt)

**Description:** Apply 0.5 to 2 ppm of Hydrothol 191; see label for special regulations

**Timing:** Actively growing plants

**Herbicide:** Sonar or Avast (fluridone)

**Description:** Apply 15 to 31 oz/A Sonar or Avast (45 to 90 ppb at 4 ft water depth); special regulations may apply

**Timing:** Actively growing plants

**Herbicide:** Clearcast (imazamox)

**Description:** Apply 50 ppb Clearcast; see label for restrictions

**Timing:** Actively growing plants

# Dalmatian toadflax

*Linaria dalmatica* ssp. *dalmatica*

## Chemical control

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**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 2 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Bud to bloom. Fall timing is most effective

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1.5 to 2 oz/A Escort XP; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Tordon 22K (picloram) + Telar XP (chlorsulfuron)

**Description:** Apply 1 pt/A Tordon 22K + 1.5 oz/A Telar XP; use a surfactant

**Timing:** Bud to bloom

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 to 4 pt/A Tordon 22K

**Timing:** Late summer to fall or late winter

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 2 lb ae/A dicamba

**Timing:** Early spring

## Biological control

---

**Insect:** Flower beetle (*Brachypterolus pulicarius*)

**Description:** Adults and larvae feed on flowers and developing fruits and reduce seed production. Documented high attack rates (>70%) yield fair control. Collect beetles in spring when the plant begins flowering. Large numbers can be collected easily using sweep nets.

**Redistribution:** May and June. Widespread collection sites.

(cont. on page 14)

## Dalmatian toadflax (*cont.*)

### Biological control (*cont.*)

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**Insect:** Defoliating moth (*Calophasia lunula*)

**Description:** Defoliation from larval feeding reduces plant vigor and seed production. Total defoliation occurs infrequently. Attack rates overall low (>10%) with infrequent mass outbreaks. Overall impact undetermined. Collect moths as larvae.

**Redistribution:** May and June. Widespread collection sites.

**Insect:** Stem boring weevil (*Mecinus janthinus*)

**Description:** Adults feed on foliage of plants whereas larvae mine within stems. Both can suppress flowering, reduce seed production, or kill stems. High attack rates are common (>70%) and yield excellent control. Collect weevils as adults.

**Redistribution:** May to late June. Widespread collection sites.

## Diffuse knapweed

*Centaurea diffusa*

### Chemical control

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**Herbicide:** Redeem R&P (clopyralid + triclopyr)

**Description:** Apply 0.75 to 1 qt/A Redeem R&P

**Timing:** Rosette to early bolting

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Spring—rosette to early bolting stages

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.66 to 1.33 pt/A Transline or Stinger

**Timing:** Up to bud stage

## Diffuse knapweed (*cont.*)

### Chemical control (*cont.*)

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**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone; use a surfactant

**Timing:** Rosette to bolting stages or in fall

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral; use crop oil concentrate or surfactant

**Timing:** Rosette to bolting stages or in fall

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosette to bolting stages

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail

**Timing:** Rosette to early bolting stages

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 fl oz/A Overdrive

**Timing:** Actively growing plants

**Herbicide:** glyphosate

**Description:** Apply 3 lb ae/A glyphosate

**Timing:** Bud stage

**Herbicide:** 2,4-D

**Description:** Apply 1 to 2 lb ae/A 2,4-D

**Timing:** Early bolting

*(cont. on page 16)*

## Diffuse knapweed (*cont.*)

### Biological control

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**Insect:** Seedhead flies (*Urophora affinis*, *U. quadrifasciata*)

**Description:** Both flies together reduce seed production by up to 75% at some sites but have little impact on stand density. *U. affinis* larvae attack the flower heads and cause a hard gall to form; in the case of *U. quadrifasciata* the gall is soft. Seed head galls reduce seed production. Documented heavy attack rates (>70%) yield fair–good control. Collect infested seed heads.

**Redistribution:** March 1 to April 30. Extremely widespread collection sites. Check whether they are already present at your redistribution site.

**Insect:** Root boring moth (*Agapeta zoegana*)

**Description:** Larvae mine the root of the plant, damaging root tissues, reducing storage capacity, and increasing the plant's susceptibility to infection by pathogens. Attack rates are low (<10%). Where present, the larvae provide fair–good control. Collect adult moths.

**Redistribution:** July 1 to August 15. Very limited collection sites.

**Insect:** Seed head weevil (*Larinus minutus*)

**Description:** Larvae destroy seeds in the seed heads, reducing seed production. Adult feeding can defoliate plants. *L. minutus* is causing the decline of diffuse knapweed in some areas. Documented attack rates are heavy (>70%) and yield excellent control. Collect weevils as adults.

**Redistribution:** May 1 to July 1. Widespread collection sites.



## Diffuse knapweed (*cont.*)

### Biological control (*cont.*)

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**Insect:** Root boring beetle (*Sphenoptera jugoslavica*)

**Description:** Larvae tunnel within the roots. Surviving plants are stunted and produce fewer stems and flowers. Adult feeding on foliage is less damaging. Documented attack rates are heavy (>70%) and yield good–excellent control. Collect beetles as adults.

**Redistribution:** July 1 to August 1. Widespread collection sites.

**Insect:** Broad-nosed knapweed seed head weevil  
(*Bangasternus fausti*)

**Description:** Adults feed on leaves, stems, and florets but prefer flower heads when available. Larvae feed on seed head tissues and reduce seed production. Documented attack rates are medium (>30%) and yield fair–good control. Collect weevils as adults

**Redistribution:** June 1 to July 1. Widespread collection sites.

**Insect:** Root weevil (*Cyphocleonus achates*)

**Description:** Larvae mine in the roots and root crown, causing a root gall to form. Damage to root tissues causes stunted plant growth and greatly reduced plant vigor. Dispersal is slow. Documented medium attack rates (>30%) yield good–excellent control. Collect weevils as adults.

**Redistribution:** August 1 to October 1. Widespread collection sites.

# Dyer's woad

*Isatis tinctoria*

## Chemical control

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Before or just after emergence

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.5 oz/A Part A and 2 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply one 20-oz pack of Cimarron X-tra for each 10 acres; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** 2,4-D LV ester

**Description:** Apply 1.90 to 2.85 lb ae/A 2,4-D LV ester

**Timing:** Rosette or bud stage

# Eurasian watermilfoil

*Myriophyllum spicatum*

## Cultural control

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**Method:** Hand pull

**Description:** Divers pull plants by hand

**Timing:** Late spring to summer

## Eurasian watermilfoil (*cont.*)

### Cultural control (*cont.*)

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**Method:** Suction dredge

**Description:** Plants can be selectively removed

**Timing:** Late spring to summer

**Method:** Benthic barrier

**Description:** Place benthic barrier frames over milfoil for 8 weeks

**Timing:** When plants are small

### Chemical control

---

**Herbicide:** Sonar (fluridone)

**Description:** Apply 0.06 to 0.09 mg ai /L fluridone in ponds. Special regulations apply; may require NPDES permit

**Timing:** Actively growing plants

**Herbicide:** Aquathol K (endothall dipotassium salt)

**Description:** Apply 1 to 3 ppm of endothall (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction). Rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish. May require NPDES permit.

**Timing:** Actively growing plants

**Herbicide:** Aqua-Kleen or Navigate (2,4-D)

**Description:** Apply 100 to 200 lb/A Aquaclean or Navigate. Do not irrigate unless concentration is less than 0.1 ppm and do not use for drinking above 0.07 ppm. May require NPDES permit.

**Timing:** Spring to early summer

**Herbicide:** Renovate 3 (triclopyr)

**Description:** Apply 0.75 to 2 ppm triclopyr. Setback distance from potable water intake applies; see label. May require NPDES permit.

**Timing:** Spring to early summer

(*cont. on page 20*)

## Eurasian watermilfoil (*cont.*)

### Biological control

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**Insect:** Stem weevil (*Euhrychiopsis lecontei*)

**Description:** This weevil co-evolved with the native milfoil, *Myriophyllum sibiricum*, but also attacks Eurasian watermilfoil. It is naturally occurring in some lakes in the Pacific Northwest but augmentation may boost its populations. Documented light attack rates (>10%) yield little control. Its impact is unknown but may be great where weevil populations are large. It may be more suitable for smaller water bodies.

**Redistribution:** Currently only available commercially.

## Fanwort

*Cabomba caroliniana*

### Chemical control

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**Herbicide:** Hydrothol 191 (endothall mono salt)

**Description:** Apply 2 to 3 ppm of Hydrothol 191; see label for special regulations. May require NPDES permit.

**Timing:** Actively growing plants

**Herbicide:** Sonar or Avast (fluridone)

**Description:** Apply 15 to 31 oz/A Sonar or Avast (45 to 90 ppb at 4 ft water depth); special regulations may apply. May require NPDES permit.

**Timing:** Actively growing plants

**Herbicide:** Galleon SC (penoxsulam)

**Description:** Apply 17 to 52 oz/A Galleon; equivalent to 25 to 75 ppb at 4 ft depth; special regulations may apply. May require NPDES permit.

**Timing:** Actively growing plants

# Feathered mosquito fern

*Azolla pinnata*

## Chemical control

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**Herbicide:** No herbicides are labeled for control

# Field bindweed

*Convolvulus arvensis*

## Chemical control

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**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 0.5 to 1 lb ae/A dicamba

**Timing:** Actively growing plants; during bloom

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 to 4 pt/A Tordon 22K

**Timing:** Early bud to bloom

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba) + 2,4-D

**Description:** Apply 0.5 to 1 lb ae/A dicamba + 1 to 2 lb ae/A 2,4-D

**Timing:** Late summer or fall before frost

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 1 oz/A Part A and 4 pt/A Part B Cimarron Max;  
use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant

**Timing:** Bloom stage

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply 2 oz/A Cimarron X-tra; use a surfactant

**Timing:** Actively growing plants

(cont. on page 22)

## Field bindweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** glyphosate

**Description:** Apply 3 to 3.75 lb ae/A glyphosate

**Timing:** Full bloom

**Herbicide:** 2,4-D

**Description:** Apply 2 to 3 lb ae/A 2,4-D

**Timing:** Bud stage

### Biological control

---

**Insect:** Gall mite (*Aceria matherbae*)

**Description:** Mites feed on mid-veins and foliage causing stunted growth and a fuzzy appearance. Documented light attack rates (>10%) can produce good control.

**Redistribution:** Limited collection sites.

**Insect:** Defoliating moth (*Tyta luctuosa*)

**Description:** Larvae defoliate plants by consuming leaves and flower buds.

**Redistribution:** The moth has established in neighboring states but not yet in Idaho.

## Flowering rush

*Butomus umbellatus*

### Chemical control

---

**Herbicide:** Habitat (imazapyr)

**Description:** Apply 2 to 3 pt/A Habitat. May require NPDES permit

**Timing:** Actively growing plants

# Giant hogweed

*Heracleum mantegazzianum*

## Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 1.5 lb ae/A glyphosate broadcast, or inject 5% v/v into stems

**Timing:** Bud stage

**Herbicide:** Garlon 4 (triclopyr)

**Description:** Apply 1% v/v Garlon 4 to foliage

**Timing:** Actively growing plants

**Herbicide:** 2,4-D

**Description:** Apply 0.95 to 1.9 lb ae/A 2,4-D

**Timing:** Bud stage

# Giant knotweed

*Polygonum sachalinense*

## Chemical control

---

**Herbicide:** Garlon 4 (triclopyr)

**Description:** Apply 1% v/v Garlon 4 to foliage

**Timing:** Actively growing plants

**Herbicide:** Habitat or Arsenal (imazapyr)

**Description:** Apply 0.5 to 1 lb/A or 1% v/v Habitat adjacent to water or Arsenal in areas away from water

**Timing:** Mid-summer after seed head forms

**Herbicide:** Aquamaster or Rodeo (glyphosate)

**Description:** Hollow-stem injection—Inject 5 ml Aquamaster or Rodeo per stem between the 2nd and 3rd internodes

**Timing:** Actively growing plants

## Giant salvinia

*Salvinia molesta*

### Chemical control

---

**Herbicide:** Aquamaster (glyphosate)

**Description:** Apply 2.0% v/v Aquamaster as a spot spray; ensure thorough coverage. May require NPDES permit

**Timing:** Actively growing plants

**Herbicide:** Reward (diquat)

**Description:** Apply 2 qt/A Reward (0.5% solution) with aquatic wetting agent (0.25-1% v/v); special regulations may apply. May require NPDES permit

**Timing:** Actively growing plants

## Hoary alyssum

*Berteroa incana*

### Chemical control

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Rosette to bolting stages

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 oz/A Telar XP; use a surfactant

**Timing:** Rosette to bolting stages



# Houndstongue

*Cynoglossum officinale*

## Chemical control

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral

**Timing:** Rosette to early bud stage; increase rate to 3 to 3.3 oz/A at bud stage

**Herbicide:** Plateau (imazapic)

**Description:** Apply 8 to 12 oz/A Plateau; use an adjuvant (methylated seed oil, vegetable oil concentrate, or surfactant)

**Timing:** Low rate at rosette stage; high rate at rosette to bolting stages

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 1 oz/A Part A and 4 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Spring up to floral bud stage

**Herbicide:** Throttle XP (chlorsulfuron + sulfometuron methyl + sulfentrazone)

**Description:** Apply 12.5 oz/A Throttle XP. Non-crop registration only

**Timing:** Pre-emergence to early postemergence

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Actively growing plants

**Herbicide:** 2,4-D ester

**Description:** Apply 2 lb ae/A 2,4-D ester

**Timing:** Actively growing plants; before bloom stage

# Hydrilla

*Hydrilla verticillata*

## Chemical control

---

**Herbicide:** fluridone

**Description:** Maintain a concentration of 45 to 90 ppb of fluridone for 30 to 90 days. May require NPDES permit

**Timing:** Early in the season as plants begin growth and oxygen levels are higher. Applying early reduces the chance that aquatic animals will face an oxygen deficit when dying plants use oxygen as they decompose. Applications within ¼ mile of a potable water intake cannot exceed 20 ppm

**Herbicide:** Aquathol K (endothall dipotassium salt)

**Description:** Apply 1 to 3 ppm endothall (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction). Rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish. May require NPDES permit

**Timing:** Actively growing plants

# Japanese knotweed

*Polygonum cuspidatum*

## Chemical control

---

**Herbicide:** Garlon 4 (triclopyr)

**Description:** Apply 1% v/v Garlon 4 to foliage

**Timing:** Actively growing plants

**Herbicide:** Habitat or Arsenal (imazapyr)

**Description:** Apply 0.5 to 1 lb/A or 1% v/v Habitat adjacent to water or Arsenal away from water

**Timing:** Mid-summer after seed head forms

## Japanese knotweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Aquamaster or Rodeo (glyphosate)

**Description:** Hollow-stem injection—Inject 5 ml Aquamaster or Rodeo per stem between the 2nd and 3rd internodes

**Timing:** Actively growing plants

## Johnsongrass

*Sorghum halepense*

### Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 2.25 lb ae/A glyphosate

**Timing:** Heading

**Herbicide:** Poast (sethoxydim)

**Description:** Apply 1.5 to 2.5 pt/A Poast

**Timing:** Actively growing plants 15 to 25 inches tall

**Herbicide:** Fusilade (fluazifop)

**Description:** Apply 1 to 1.5 pt/A Fusilade

**Timing:** Actively growing plants 8 to 18 inches tall; before boot stage

**Herbicide:** Bueno or Trans-Vert (MSMA)

**Description:** Apply 2 lb ai/A MSMA

**Timing:** Rapidly growing plants

**Herbicide:** Acclaim Extra (fenoxaprop)

**Description:** Apply 2 to 2.4 pt/A Acclaim Extra. For turf and ornamental use only

**Timing:** 2- to 5-leaf stages; 24 to 60 inches tall

## Jointed goatgrass

*Aegilops cylindrica*

### Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 0.38 to 0.75 lb ae/A glyphosate

**Timing:** Actively growing plants before boot stage

**Herbicide:** Oust (sulfometuron)

**Description:** Apply 1.3 to 2 oz/A Oust; use a surfactant

**Timing:** Early in fall to late winter before plants are 3 inches tall

## Leafy spurge

*Euphorbia esula*

### Chemical control

---

**Herbicide:** Plateau (imazapic)

**Description:** Apply 8 oz/A Plateau; use an adjuvant (methylated seed oil, vegetable oil concentrate, or surfactant)

**Timing:** After summer dry period when plants begin to grow

**Herbicide:** Tordon 22K (picloram) + 2,4-D

**Description:** Apply 2 pt/A Tordon 22K + 1 lb ae/A 2,4-D

**Timing:** Bloom stage

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 to 4 pt/A Tordon 22K

**Timing:** Bloom stage

**Herbicide:** glyphosate

**Description:** Apply 0.38 lb ae/A glyphosate three times at 1-month intervals beginning in June or apply 0.75 lb ae/A glyphosate two times at 1-month intervals beginning in June

**Timing:** June, July, and August or June and July

## Leafy spurge (cont.)

### Chemical control (cont.)

---

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 1 lb ae/A dicamba

**Timing:** Spring to early summer

**Herbicide:** 2,4-D LV ester

**Description:** Apply 1 lb ae/A 2,4-D LV ester to suppress seed production or 6 lb ae/A 2,4-D LV ester for control

**Timing:** Actively growing plants

### Biological control

---

**Insect:** Flea beetles (*Aphthona cyparissiae*, *A. czwalinae*, and *A. flava*)

**Description:** Adults feed on leaves; larvae feed on root hairs and root tissues. Light attack rates (>10%) yield good control. Collect beetles as adults.

**Redistribution:** June 1 to August 1. Limited collection sites.

**Insect:** Flea beetles (*Aphthona lacertosa* and *A. nigriscutis*)

**Description:** Adults feed on leaves; larvae feed on root hairs and root tissues. Documented high attack rates (>70%) yield excellent control. Collect beetles as adults.

**Redistribution:** June 1 to August 1. Widespread collection sites.

**Insect:** Leafy spurge hawkmoth (*Hyles euphorbiae*)

**Description:** Larval feeding defoliates the plant. Documented medium attack rates (>30%) yield little control. The larvae are prone to disease and are preyed upon. Collect moths as adults.

**Redistribution:** June 15 to July 30 and August 15 to September 30. Widespread collection sites.

(cont. on page 30)

## Leafy spurge (cont.)

### Biological control (cont.)

---

**Insect:** Red-headed spurge stem borer (*Obera erythrocephala*)

**Description:** Larval mining within stems can greatly reduce seed production, kill stems, and reduce root reserves. Adult feeding has little impact. Documented medium attack rates (>30%) yield good control. Collect beetles as adults.

**Redistribution:** July 15 to August 31. Widespread collection sites.

## Matgrass

*Nardus stricta*

### Cultural control

---

**Method:** Hand removal

**Description:** Dig small clumps and remove them from the site

**Timing:** Early to late spring

### Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 2 lb ae/A glyphosate as a spot treatment or to heavily infested areas where selective control is not required

**Timing:** Actively growing plants

# Meadow knapweed

*Centaurea debeauxii*

## Chemical control

---

**Herbicide:** Redeem R&P (clopyralid + triclopyr)

**Description:** Apply 0.75 to 1 qt/A Redeem R&P

**Timing:** Rosette to early bolting stages

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.66 to 1.33 pt/A Stinger or Transline

**Timing:** Up to bud stage

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone; use a surfactant

**Timing:** Rosette to bolting stages or in the fall

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Spring before bolting

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail.

**Timing:** After rosettes form in spring; before bolting

**Herbicide:** 2,4-D

**Description:** Apply 1 to 2 lb ae/A 2,4-D

**Timing:** Early bolting

**Herbicide:** glyphosate

**Description:** Apply 3 lb ae/A glyphosate

**Timing:** Bud stage

*(cont. on page 32)*

## Meadow knapweed (*cont.*)

### Biological control

---

**Insect:** Seed head weevil (*Larinus minutus* and *L. obtusus*)

**Description:** Weevils overwinter as adults and emerge in spring when they begin to feed on knapweed foliage. Larvae feed on seeds and seed head tissues. High attack rates (>70%) yield excellent control. Collect weevils as adults.

**Redistribution:** May 1 to July 1. Limited collection sites in Idaho; mass collection sites in Oregon.

**Insect:** Seed head gall fly (*Urophora quadrifasciata*)

**Description:** Larvae form soft galls in the seed head of the plant, reducing seed production but with little impact on stand density. Attack rates unknown for Idaho. Collect infested seed heads in early spring.

**Redistribution:** March 1 to May 1.

## Mediterranean sage

*Salvia aethiopsis*

### Chemical control

---

**Herbicide:** Escort XP (metsulfuron) + 2,4-D

**Description:** Apply 1 oz/A Escort XP + 1 lb ae/A 2,4-D; use a surfactant

**Timing:** Rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Rosette to bolting stages

**Herbicide:** glyphosate

**Description:** Spot spray 1 to 2% v/v glyphosate

**Timing:** Rosette to bolting stages



## Mediterranean sage (cont.)

### Biological control

---

**Insect:** Mediterranean root weevil (*Phrydiuchus tau*)

**Description:** Adults chew holes in the aromatic sage leaves, leaving characteristic shot holes. At high weevil densities, leaves can be severely damaged. Larvae chew into the root crown, feeding on root tissue for about 6 weeks. Heavy larval feeding damage can kill small plants. Documented heavy attack rates (70%) yield good control. Collect weevils as adults of the new (spring) generation (adults hide during the hot summer).

**Redistribution:** May to June. Widespread collection sites.

## Milium

*Milium vernale*

### Chemical control

---

**Herbicide:** No herbicides are labeled for control

## Musk thistle

*Carduus nutans*

### Chemical control

---

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 0.5 to 1 oz/A Telar XP; use a surfactant

**Timing:** After rosettes form in spring; before bolting

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Actively growing rosettes

(cont. on page 34)

## Musk thistle (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.25 oz/A Part A and 1 pt/A Part B; use a surfactant

**Timing:** Prior to flowering

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply 0.5 oz/A Cimarron X-tra

**Timing:** Prior to flowering

**Herbicide:** Redeem R&P (triclopyr + clopyralid)

**Description:** Apply 1 to 2 pt/A Redeem R&P

**Timing:** Rosette to early bolting stages

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.25 to 1.33 pt/A Stinger or Transline

**Timing:** Rosette to early bolting stages

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 3 to 5 fl oz/A Milestone

**Timing:** Apply 3 to 5 fl oz/A to rosettes or bolting plants. Apply 4 to 5 fl oz/A at the late bolting through early flowering stages

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 1 to 2.5 oz/A Chaparral

**Timing:** Spring to early summer to rosette or bolting plants; fall to seedlings and rosettes

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 1.5 to 2 pt/A Forefront R&P

**Timing:** Rosette to bolting stages

**Herbicide:** Throttle XP (chlorsulfuron + sulfometuron methyl + sulfentrazone)

**Description:** Apply 12.5 oz/A Throttle XP. Non-crop registration only

**Timing:** Pre-emergence to early postemergence

## Musk thistle (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 0.5 to 1 pt/A Tordon 22K

**Timing:** Rosettes in fall

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail

**Timing:** Late rosette to just before flower bud formation

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 0.5 to 1 lb ae/A dicamba

**Timing:** Fall or spring but before bolting

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 fl oz/A Overdrive; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** 2,4-D

**Description:** Apply 1.5 to 2 lb ae/A 2,4-D

**Timing:** Fall or spring but before bolting

**Herbicide:** Campaign (glyphosate + 2,4-D)

**Description:** Apply 4 pt/A Campaign

**Timing:** Rosette in fall; before freezing in spring

# Orange hawkweed

*Hieracium aurantiacum*

## Chemical control

---

**Herbicide:** Transline or Stinger (clopyralid)

**Description:** Apply 0.66 to 1.33 pt/A Transline or Stinger

**Timing:** Fall or spring but before bolting

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 4 to 7 fl oz/A Milestone

**Timing:** Rosette to bolting stages

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral

**Timing:** Bolting stage

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosette to bolting stages

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail

**Timing:** Fall or spring but before bolting

**Herbicide:** Redeem R&P (clopyralid + triclopyr)

**Description:** Apply 1.5 to 2 qt/A Redeem R&P

**Timing:** In fall to rosettes

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 pt/A Tordon 22K

**Timing:** After rosettes form in spring; before bolting

**Herbicide:** 2,4-D

**Description:** Apply 1.43 to 1.90 lb ae/A 2,4-D

**Timing:** Actively growing rosettes

# Oxeye daisy

*Leucanthemum vulgare*

## Chemical control

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Rosette to bolting stages

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 4 to 7 oz/A Milestone

**Timing:** Rosette to bolting stages

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral

**Timing:** Prebud stage

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 1.5 to 2 pt/A Forefront R&P

**Timing:** Rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1.5 to 2 pt/A Tordon 22K with at least 30 gal/A of water

**Timing:** Rosette to bolting stages

**Herbicide:** Transline (clopyralid)

**Description:** Apply 4 to 11 oz/A Transline

**Timing:** Rosette to bolting stages

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 oz/A Overdrive

**Timing:** Actively growing plants

**Herbicide:** Throttle XP (chlorsulfuron + sulfometuron methyl + sulfentrazone)

**Description:** Apply 12.5 oz/A Throttle XP. Non-crop registration only

**Timing:** Pre-emergence to early postemergence

## Parrotfeather milfoil

*Myriophyllum aquaticum*

### Chemical control

---

**Herbicide:** No herbicides are labeled for control

## Perennial pepperweed

*Lepidium latifolium*

### Chemical control

---

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Flower bud stage

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant

**Timing:** Flower bud stage

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 3.3 oz/A Chaparral for suppression

**Timing:** Early flowering to bloom stage; add 2 lb ae/A 2,4-D for optimum control

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply 2 oz/A Cimarron X-tra; use a surfactant

**Timing:** Actively growing plants less than 4 inches tall

**Herbicide:** Telar XP (chlorsulfuron) + mowing

**Description:** Apply 1 to 3 oz/A Telar XP; use a surfactant

**Timing:** Apply to resprouting stems

## Perennial pepperweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** glyphosate

**Description:** Apply 3 lb ae/A glyphosate to stems recovered to flower bud stage after previous mowing at flower bud stage. In riparian areas and wetlands, apply 3 qt/A Rodeo.

**Timing:** Flower bud stage

**Herbicide:** Weedar (2,4-D amine)

**Description:** Apply 1.9 lb ae/A 2,4-D amine

**Timing:** Flower bud stage

**Herbicide:** Weedone (2,4-D ester)

**Description:** Apply 2 lb ae/A 2,4-D ester; see label for air temperature restrictions

**Timing:** Resprouting stems in late summer

**Herbicide:** Arsenal (imazapyr)

**Description:** Spot spray 6 to 24 fl oz/A Arsenal

**Timing:** Flower bud stage

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 1 oz/A Part A and 4 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Bud to bloom stages

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply one 20-oz pack of Cimarron X-tra per 10 acres; use a surfactant

**Timing:** Bud to bloom stages

# Perennial sowthistle

*Sonchus arvensis*

## Chemical control

---

**Herbicide:** 2,4-D

**Description:** Apply 2 lb ae/A 2,4-D

**Timing:** Bud stage or regrowth 8 to 10 inches high

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 1 to 4 qt/A Curtail.

**Timing:** Rosettes or before flower buds form

**Herbicide:** Redeem R&P (triclopyr + clopyralid)

**Description:** Apply 2.5 to 4 pt/A Redeem R&P

**Timing:** Rosettes or before flower buds form

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 3 to 5 fl oz/A Milestone

**Timing:** Rosettes or before flower buds form

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2 to 2.5 oz/A Chaparral

**Timing:** Rosettes to prebud stage

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosettes to prebud stage

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 1 oz/A Part A and 4 pt/A Part B Cimarron Max;  
use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 fl oz/A Overdrive

**Timing:** Actively growing plants



# Plumeless thistle

*Carduus acanthoides*

## Chemical control

---

**Herbicide:** Weedar (2, 4-D amine)

**Description:** Apply 2 to 4 pt/A 2,4-D amine

**Timing:** Rosette to bolting stages

**Herbicide:** Banvel, Clarity, Vanquish (dicamba)

**Description:** Apply 0.5 to 1 lb ae/A dicamba

**Timing:** Rosette stage

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1.0 oz/A Escort XP; use a surfactant

**Timing:** Rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 8 to 12 oz/A Tordon 22K

**Timing:** Rosette to bolting stages; in fall prior to freeze up

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 3 to 5 oz/A Milestone

**Timing:** Rosette to bolting stages in early summer; seedling to rosette stages in fall

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 1 to 2.5 oz/A Chaparral

**Timing:** Spring to early summer to rosette or bolting stages; fall to seedlings and rosettes

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 1.5 to 2 pt/A Forefront R&P

**Timing:** Rosette to bolting stages in early summer

# Poison hemlock

*Conium maculatum*

## Chemical control

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant

**Timing:** Rosette in spring

**Herbicide:** 2,4-D

**Description:** Apply 1 to 2 lb ae/A 2,4-D

**Timing:** Rosette in spring

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral (suppression only)

**Timing:** Rosette in spring

**Herbicide:** MCPA

**Description:** Apply 1 to 2 lb ae/A MCPA

**Timing:** Rosette in spring

**Herbicide:** glyphosate

**Description:** Apply 1 lb ae/A glyphosate

**Timing:** Rosette in spring

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 1 oz/A Part A and 4 pt/A Part B Cimarron Max;  
use a surfactant

**Timing:** Bud to bloom stages

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply one 20-oz pack of Cimarron X-tra per 10 acres;  
use a surfactant

**Timing:** Bud to bloom stages

## Poison hemlock (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Rosette in spring

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 fl oz/A Overdrive

**Timing:** Actively growing plants

## Policeman's helmet

*Impatiens glandulifera*

### Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 35% to 75% glyphosate solutions for wick applications; apply 1 to 2% v/v glyphosate for spot spray

**Timing:** Wick applications—when policeman's helmet plants are taller than surrounding desirable plants; spot spray—rosette to bolting

**Herbicide:** 2,4-D

**Description:** Apply 0.8 to 1 lb ae/A 2,4-D

**Timing:** Spring after plants emerge

## Puncturevine

*Tribulus terrestris*

### Chemical control

---

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Late fall or late winter

**Herbicide:** Krovar (bromacil + diuron)

**Description:** Apply 10 lb/A Krovar in fall or 8 lb/A Krovar in spring

**Timing:** Fall or spring

**Herbicide:** 2,4-D

**Description:** Apply 2 lb ae/A 2,4-D

**Timing:** Seedlings; will require retreatment when new seedlings emerge

## Purple loosestrife

*Lythrum salicaria*

### Chemical control

---

**Herbicide:** Garlon 3A (triclopyr)

**Description:** Apply 1 to 1.5% v/v Garlon 3A. May require NPDES permit

**Timing:** Bloom stage or seedlings

**Herbicide:** Rodeo (glyphosate) + 2,4-D

**Description:** Apply 0.25% v/v Rodeo + 2% v/v 2,4-D. May require NPDES permit

**Timing:** Before bloom

**Herbicide:** Rodeo (glyphosate)

**Description:** Apply 1% v/v Rodeo. May require NPDES permit

**Timing:** Full to late flowering

## Purple loosestrife (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant. May require NPDES permit

**Timing:** Actively growing plants

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply one 20-oz pack of Cimarron X-tra per 10 acres; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 1 oz/A Part A and 4 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Actively growing plants

### Biological control

---

**Insect:** Loosestrife leaf feeding beetles (*Galerucella californiensis* and *G. pusilla*)

**Description:** Adults consume newly formed buds and foliage, while larvae feed on buds, leaves, and stems. Documented heavy attack rates (>70%) provide excellent control. Collect beetles as adults.

**Redistribution:** Collect first generation in May and early June or the second generation from July 1 to August 1. Widespread collection sites.

**Insect:** Loosestrife root mining weevil (*Hylobius transversovittatus*)

**Description:** Adults feed on newly formed foliage during dusk and dawn. Larvae penetrate the root and feed within it, depleting sugar reserves and diminishing plant survival. Documented light attack rates (>10%) provide good and long-term control. Collect adults in spring to late summer.

**Redistribution:** April 15 to September 30. Limited collection sites.

(*cont. on page 46*)

## Purple loosestrife (*cont.*)

### Biological control (*cont.*)

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**Insect:** Loosestrife flower weevil (*Nanophyes marmoratus*)

**Description:** Adults feed on developing leaves near shoot tips and flower buds. Larvae consume the developing petals, stamens, and ovaries, thereby destroying the buds. Collect weevils as adults.

**Redistribution:** July 15 to August 15. Widespread collection sites.

## Rush skeletonweed

*Chondrilla juncea*

### Chemical control

---

**Herbicide:** Transline or Stinger (clopyralid)

**Description:** Apply 0.66 to 1 pt/A Transline or Stinger

**Timing:** Rosettes in fall or spring

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone

**Timing:** After rosettes form in spring

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3 oz/A Chaparral

**Timing:** After rosettes form in spring

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 to 4 pt/A Tordon 22K

**Timing:** Rosettes in fall or spring

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** For best results, apply 2 oz/A Cimarron X-tra plus 0.5 pt/A dicamba plus 1 pt/A 2,4-D

**Timing:** Rosettes in spring

## Rush skeletonweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 oz/A Overdrive

**Timing:** Actively growing plants

**Herbicide:** 2,4-D

**Description:** Apply 2 lb ae/A 2,4-D; additional treatment will be necessary

**Timing:** Rosettes in spring

**Herbicide:** MCPA

**Description:** Apply 2 lb ae/A MCPA; additional treatment will be necessary

**Timing:** Rosettes in spring

### Biological control

---

**Rust:** Skeletonweed rust (*Puccinia chondrillina*)

**Description:** Rust infects the rosette in fall and spring, causing brown pustules to erupt through the leaf and stem surfaces.

Documented heavy attack rates (>70%) provide good control on susceptible genotypes. Collect leaves with rust lesions.

**Redistribution:** May 1 to July 1. Widespread collection sites.

**Insect:** Root boring moth (*Bradyrrhoa gilveolella*)

**Description:** Larvae feed on root hairs and on roots during the summer. Larval feeding reduces plant vigor. Unknown attack rates and unknown control in Idaho. Collect adult moths.

**Redistribution:** July 1 to September 1. Very limited collection sites.

(*cont. on page 48*)

## Rush skeletonweed (*cont.*)

### Biological control (*cont.*)

---

**Insect:** Gall midge (*Cystiphora schmidtii*)

**Description:** Larval feeding stresses the plant and can reduce flowering. Documented heavy attack rates (>70%) provide good control. Collect stems with galls.

**Redistribution:** June 1 to July 1. Widespread collection sites.

**Insect:** Gall mite (*Eriophyes chondrillae*)

**Description:** Mites feed on flower buds or stem tips. High mite populations stunt and deform plants and can stop seed production. Documented heavy attack rates (>70%) provide excellent control. Collect green galls with some yellow to rust color.

**Redistribution:** June 1 to July 1. Widespread collection sites.

## Russian knapweed

*Acroptilon repens*

### Chemical control

---

**Herbicide:** Redeem R&P (triclopyr + clopyralid)

**Description:** Apply 1.25 to 2 qt/A Redeem R&P

**Timing:** Rosette to early bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 to 4 pt/A Tordon 22K

**Timing:** Spring before bolting

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season.

**Timing:** After rosettes form in spring; before bolting



## Russian knapweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 1 to 1.33 pt/A Stinger or Transline

**Timing:** Up to bud stage

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 oz/A Milestone

**Timing:** Bud to flowering stages; dormant plants in fall

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral

**Timing:** Early bud to flowering stage in spring to summer; dormant plants in fall

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosette to bolting stage

**Herbicide:** glyphosate

**Description:** Apply 3 lb ae/A glyphosate

**Timing:** Bud stage

**Herbicide:** 2,4-D

**Description:** Apply 4 to 8 lb ae/A 2,4-D

**Timing:** Early bolting

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Fall

*(cont. on page 50)*

## Russian knapweed (*cont.*)

### Biological control

---

**Nematode:** Nematode (*Subanguina picridis*)

**Description:** Nematode produces galls on stems. Unknown attack rate and unknown control in Idaho. Collect galls in fall.

**Redistribution:** September to November. Place galls on soil. Very limited collection sites.

## Saltcedar

*Tamarix* sp.

### Chemical control

---

**Herbicide:** Garlon 4 (triclopyr)

**Description:** Cut stump—Apply 100% v/v of Garlon 4 to wet circumference of cut stump. Low-volume basal bark—Apply with oil-water mix at 20 to 30% v/v of Garlon 4 to thoroughly wet lower stems, including the root collar

**Timing:** Cut stump—year-round but avoid drought conditions. Basal bark—year-round unless snow covers root collar

**Herbicide:** Habitat (imazapyr)

**Description:** Spot spray—Apply 1% v/v Habitat. Foliar—Apply 2 pt/A Habitat

**Timing:** Actively growing foliage; during flowering

**Herbicide:** Rodeo (glyphosate)

**Description:** Broadcast—Apply 3 to 7.5 pt/A Rodeo. Cut stump—Apply 100% v/v of Rodeo to wet circumference of stump

**Timing:** Broadcast—When soil moisture is available for plant growth. Cut stump—Year-round; avoid drought conditions

# Scotch broom

*Cytisus scoparius*

## Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 2% v/v of glyphosate to foliage; stop application before runoff

**Timing:** Actively growing plants

**Herbicide:** Garlon 3A or 4 (triclopyr)

**Description:** Apply 1 to 1.5% v/v of Garlon 3A or 0.5 to 1.5% of Garlon 4 to foliage; stop application before runoff

**Timing:** Actively growing plants

**Herbicide:** Milestone VM Plus (aminopyralid + triclopyr)

**Description:** Apply 6 to 9 pt/A Milestone VM Plus

**Timing:** Optimal timing at bloom stage

**Herbicide:** Crossbow (triclopyr + 2,4-D)

**Description:** Apply 1 to 1.5% v/v of Crossbow to foliage; stop application before runoff

**Timing:** Actively growing plants

## Biological control

---

**Insect:** Scotch broom bruchid (*Bruchidius villosus*)

**Description:** Larvae feed within pods of scotch broom and reduce seed production. Documented attack rates (>25%) provide fair control. Collect adult beetles.

**Redistribution:** May 1 to July 1. Limited collection sites.

**Nematode:** Scotch broom seed weevil (*Exapion fuscirostre*)

**Description:** Adults feed on flowers in spring to stimulate egg production. Eggs are laid into seed pods, and larvae feed on the seeds.

Documented attack rates (>50%) provide good control. Collect adults.

**Redistribution:** May 1 to July 1. Limited collection sites.

# Scotch thistle

*Onopordum acanthium*

## Chemical control

---

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 1 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Actively growing rosettes

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant

**Timing:** Actively growing rosettes

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.25 oz/A Part A and 1 to 2 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Spring prior to flowering

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply 0.5 oz/A Cimarron X-tra; use a surfactant

**Timing:** Rosette stage

**Herbicide:** Redeem R&P (triclopyr + clopyralid)

**Description:** Apply 1 to 2 pt/A Redeem R&P

**Timing:** Rosette to early bolting stages

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail.

**Timing:** Late rosette to just before flower bud formation

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.25 to 1 pt/A Stinger or Transline

**Timing:** Rosette to early bolting stages

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 oz/A Milestone

**Timing:** Rosette to bolting stage. Use higher rate at bolting stage

## Scotch thistle (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 1.5 to 2.5 oz/A Chaparral

**Timing:** Rosette to bolting stage in spring and summer

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 1.5 to 2 pt/A Forefront R&P

**Timing:** Rosette to bolting stage

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 0.5 to 1 pt/A Tordon 22K

**Timing:** Rosettes in the fall

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 0.5 to 1 lb ae/A dicamba

**Timing:** Fall or spring before bolting

**Herbicide:** 2,4-D

**Description:** Apply 1.5 to 2 lb ae/A 2,4-D

**Timing:** Fall or spring before bolting

**Herbicide:** Campaign (glyphosate + 2,4-D)

**Description:** Apply 1 to 2 pt/A Campaign

**Timing:** Rosette in fall before freezing or in spring

**Herbicide:** Throttle XP (chlorsulfuron + sulfometuron methyl + sulfentrazone)

**Description:** Apply 12.5 oz/A Throttle XP. Non-crop registration only

**Timing:** Pre-emergence to early postemergence

## Small bugloss

*Anchusa arvensis*

### Chemical control

---

**Herbicide:** 2,4-D ester

**Description:** Apply 2 lb ae/A 2,4-D ester; surfactant necessary

**Timing:** Rosette to bolting stages

**Herbicide:** glyphosate

**Description:** Apply 1 to 2% v/v glyphosate

**Timing:** Spot spray rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K; surfactant necessary

**Timing:** Rosette to bolting stages

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; surfactant necessary

**Timing:** Rosette to bolting stages

## Spotted knapweed

*Centaurea stoebe*

### Chemical control

---

**Herbicide:** Redeem R&P (triclopyr + clopyralid)

**Description:** Apply 0.75 to 1 qt/A Redeem R&P

**Timing:** Rosette to early bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt A/Tordon 22K

**Timing:** Spring before bolting

## Spotted knapweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail

**Timing:** After rosettes form in spring, before bolting

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.33 to 1.33 pt/A Stinger or Transline

**Timing:** Up to bud stage

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone

**Timing:** Rosette to bolting stages or in fall

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral

**Timing:** Rosette to bolting stage or in fall

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosette to bolting stage

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 fl oz/A Overdrive

**Timing:** Actively growing plants

**Herbicide:** 2,4-D

**Description:** Apply 1 to 2 lb ae/A 2,4-D

**Timing:** Early bolting

**Herbicide:** glyphosate

**Description:** Apply 3 lb ae/A glyphosate

**Timing:** Bud stage

*(cont. on page 56)*

## Spotted knapweed (*cont.*)

### Biological control

---

**Insect:** Seed head flies (*Urophora affinis* and *U. quadrifasciata*)

**Description:** The two species together reduce seed production by 75% to 95% at some sites but have no impact on stand density. *U. affinis* larvae attack the seed head causing the plant to form a hard gall; the gall of *U. quadrifasciata* is soft. Documented heavy attack rates (>70%) yield good control. Collect infested seed heads in early spring.

**Redistribution:** March 1 to April 30. Widespread collection sites.

**Insect:** Root boring moth (*Agapeta zoegana*)

**Description:** Larvae mine the root of the plant, reducing its storage capacity and increasing its susceptibility to infection by fungi or bacteria. Documented light attack rates (>10%) provide good control. Collect adults.

**Redistribution:** July 1 to August 15. Widespread collection sites.

**Insect:** Seed head weevils (*Larinus minutus* and *L. obtusus*). The two weevils are difficult to distinguish.

**Description:** Larvae feed on seed head tissues and developing fruits, reducing seed production. Adult weevils feed on foliage and stem rind tissues. *L. minutus* heavy attack rates (>70%) provide excellent control. *L. obtusus* medium attack rates (>30%) provide fair control. Collect adult weevils.

**Redistribution:** May 1 to July 1. *L. minutus* has widespread collection sites. *L. obtusus* has limited collection sites.

**Insect:** Root boring beetle (*Sphenoptera jugoslavica*)

**Description:** Larvae tunnel within the roots. Surviving plants are stunted and produce fewer stems and flowers. Adult feeding on foliage is less damaging. Attack rates are low to intermediate but provide good control. Collect beetles as adults.

**Redistribution:** July 1 to August 1. Widespread collection sites.



## Spotted knapweed (*cont.*)

### Biological control (*cont.*)

---

**Insect:** Broad-nosed knapweed seed head weevil (*Bangasternus fausti*)

**Description:** Adults feed on leaves, stems, and florets but prefer flower heads when available. Larvae feed on seed head tissues and reduce seed production. Documented medium attack rates (>30%) yield fair–good control. Collect weevils as adults

**Redistribution:** May 1 to July 1. Widespread collection sites.

**Insect:** Knapweed peacock fly (*Chaetorellia acrolophi*)

**Description:** Larvae of this fruit fly burrow into the center of buds and feed on seed head tissues and developing seeds, destroying the seeds and reducing seed production. Documented light attack rates (>10%) provide fair control. Collect infested seed heads in early spring.

**Redistribution:** February 1 to April 1. Limited collection sites.

**Insect:** Root weevil (*Cyphocleonus achates*)

**Description:** Larvae mine in the upper part of the root, causing a root gall to form. Larval feeding reduces general plant vigor and leads to stunted plant growth. Documented medium attack rates (>30%) provide good to excellent control. Collect weevils as adults.

**Redistribution:** August 1 to October 1. Widespread collection sites.

## Squarrose knapweed

*Centaurea triumfetti*

### Chemical control

---

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone

**Timing:** Rosette to bud stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Rosette stage

**Herbicide:** Stinger or Transline (clopyralid)

**Description:** Apply 0.33 to 1.33 pt/A Stinger or Transline

**Timing:** Rosette to bud stages

## Syrian beancaper

*Zygophyllum fabago*

### Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 1.5 lb ae/A glyphosate

**Timing:** Flower bud stage

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 4 pt/A Tordon 22K

**Timing:** In fall before frost

## Tall hawkweed

*Hieracium piloselloides*

### Chemical control

---

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 4 to 6 oz/A Milestone

**Timing:** Rosette to bolting stages

**Herbicide:** Transline (clopyralid)

**Description:** 0.66 to 1 pt/A Transline

**Timing:** Rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 0.5 pt/A Tordon 22K

**Timing:** Rosette to bolting stages

## Tansy ragwort

*Senecio jacobaea*

### Chemical control

---

**Herbicide:** 2,4-D

**Description:** Apply 1 to 2 lb ae/A 2,4-D

**Timing:** Before flowers open

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 2 to 4 pt/A Tordon 22K

**Timing:** Up to flowering stage

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 5 to 7 fl oz/A Milestone

**Timing:** Up to flowering stage

(cont. on page 60)

## Tansy ragwort (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 1 lb ae/A dicamba

**Timing:** Up to flowering stage

**Herbicide:** Weedmaster (2,4-D + dicamba)

**Description:** Apply 2 qt/A Weedmaster

**Timing:** Up to flowering stage

**Herbicide:** Crossbow (triclopyr + 2,4-D)

**Description:** Apply 1.5 to 2 qt/A Crossbow

**Timing:** Before flowering stage

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 0.5 to 1 oz/A Escort XP; use a surfactant

**Timing:** Actively growing plants

**Herbicide:** Cimarron Max (Part A: metsulfuron, Part B: dicamba + 2,4-D)

**Description:** Apply 0.5 oz/A Part A and 2 pt/A Part B Cimarron Max; use a surfactant

**Timing:** Actively growing plants prior to flowering

**Herbicide:** Throttle XP (chlorsulfuron + sulfometuron methyl + sulfentrazone)

**Description:** Apply 12.5 oz/A Throttle XP. Non-crop registration only

**Timing:** Pre-emergence to early postemergence

### Biological control

---

**Insect:** Ragwort seed fly (*Botanophila seneciella*)

**Description:** Larvae penetrate the seed heads and feed on the developing seeds. Light attack rates (>10%) provide fair control. Collect adult flies.

**Redistribution:** June 1 to July 1. Limited collection sites.

## Tansy ragwort (*cont.*)

### Biological control (*cont.*)

---

**Insect:** Ragwort flea beetle (*Longitarsus jacobaeae*).

**Description:** Larvae mine inside and outside the roots, significantly damaging the plant and often killing it. Adults feed on the leaves and stems. Documented heavy attack rates (>70%) provide excellent control.

**Redistribution:** Fall through early spring. Widespread collection sites.

## Variable-leaf-milfoil *Myriophyllum heterophyllum*

### Chemical control

---

**Herbicide:** Navigate (2,4-D ester)

**Description:** Apply 100 to 200 lb/A Navigate. Do not irrigate unless concentration is less than 0.1 ppm and do not use for drinking above 0.07 ppm. May require NPDES permit

**Timing:** Spring to early summer

**Herbicide:** Reward (diquat)

**Description:** Apply 2 qt/A Reward (0.5% solution) with aquatic wetting agent (0.25-1% v/v); see label for special regulations. May require NPDES permit

**Timing:** Actively growing plants

**Herbicide:** Aquathol K (endothall dipotassium salt)

**Description:** Apply 2 to 3 ppm of Aquathol K (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction); rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish. May require NPDES permit

**Timing:** Actively growing plants

(*cont. on page 62*)

## Variable-leaf-milfoil (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Hydrothol 191 (endothall mono salt)

**Description:** Apply 1 to 2 ppm of Hydrothol 191; see label for special regulations. May require NPDES permit

**Timing:** Actively growing plants

**Herbicide:** Renovate 3 (triclopyr)

**Description:** Apply 2.7 to 7.2 gal/A Renovate (0.75-2.0 ppm ae at 4 ft water depth); see label for special regulations. May require NPDES permit

**Timing:** Actively growing plants

**Herbicide:** Clearcast (imazamox)

**Description:** Apply 4 pt/A Clearcast with 1% v/v MSO broadcast; 1-3% v/v Clearcast as spot spray; or 100 to 200 ppb Clearcast subsurface; see label for restrictions. May require NPDES permit

**Timing:** Emerged plants

**Herbicide:** Sonar or Avast (fluridone)

**Description:** Apply 15 to 31 oz/A Sonar or Avast (45 to 90 ppb at 4 ft water depth); special regulations may apply. May require NPDES permit

**Timing:** Actively growing plants

## Vipers bugloss

*Echium vulgare*

### Chemical control

---

**Herbicide:** 2,4-D ester

**Description:** Apply 2 lb ae/A 2,4-D ester; surfactant necessary

**Timing:** Rosette to bolting stages

**Herbicide:** glyphosate

**Description:** Apply 1 to 2% v/v glyphosate

**Timing:** Spot spray rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K; surfactant necessary

**Timing:** Rosette to bolting stages

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; surfactant necessary

**Timing:** Rosette to bolting stages

## Water chestnut

*Trapa natans*

### Chemical control

---

**Herbicide:** Navigate (2,4-D ester)

**Description:** Apply 150 to 200 lb/A Navigate; application rates differ with water depth. May require NPDES permit

**Timing:** Actively growing plants early in the growing season

## White bryony

*Bryonia alba*

### Chemical control

---

**Herbicide:** glyphosate

**Description:** Apply 100% v/v glyphosate to cut root

**Timing:** Cut root 3 to 4 inches below surface

## Whitetop

*Cardaria draba*

### Chemical control

---

**Herbicide:** Escort XP (metsulfuron)

**Description:** Apply 1 to 2 oz/A Escort XP; use a surfactant

**Timing:** Bud to bloom stages or rosette in fall

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 0.5 to 1 oz/A Telar XP; use a surfactant

**Timing:** Bud to bloom stages or rosette in fall

**Herbicide:** Cimarron X-tra (metsulfuron + chlorsulfuron)

**Description:** Apply one 20-oz pack of Cimarron X-tra per 10 acres;  
use a surfactant

**Timing:** Bud to bloom stages

**Herbicide:** Throttle XP (chlorsulfuron + sulfometuron methyl +  
sulfentrazone)

**Description:** Apply 12.5 oz/A Throttle XP. Non-crop registration only

**Timing:** Pre-emergence to early postemergence

**Herbicide:** 2,4-D

**Description:** Apply 2 to 3 lb ae/A 2,4-D

**Timing:** Before bud stage



## Yellow devil hawkweed

*Hieracium glomeratum*

### Chemical control

---

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 4 to 6 oz/A Milestone

**Timing:** Rosette to bolting stages

**Herbicide:** Transline (clopyralid)

**Description:** Apply 0.66 to 1.33 pt/A Transline

**Timing:** Rosette to bolting stages

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 0.5 pt/A Tordon 22K

**Timing:** Rosette to bolting stages

## Yellow flag iris

*Iris pseudacorus*

### Chemical control

---

**Herbicide:** Aquamaster (glyphosate)

**Description:** Hollow stem injection— inject 0.5 mL/stem in cut flower stems up to 9 inches above root crown; do not exceed 8 qt/A. May require NPDES permit

**Timing:** Actively growing plants

## Yellow floating heart

*Nymphoides peltata*

### Chemical control

---

**Herbicide:** No herbicides are labeled for control

## Yellow hawkweed

*Hieracium caespitosum*

### Chemical control

---

**Herbicide:** Redeem R&P (clopyralid + triclopyr)

**Description:** Apply 1.5 to 2 qt/A Redeem R&P

**Timing:** After basal leaves form, before flower bud stage

**Herbicide:** Tordon 22 K (picloram)

**Description:** Apply 0.5 pt/A Tordon 22K

**Timing:** After basal leaves form, before flower bud stage

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 qt/A Curtail

**Timing:** After basal leaves form, before flower bud stage

**Herbicide:** Transline or Stinger (clopyralid)

**Description:** Apply 0.66 to 1.33 pt/A Transline or Stinger

**Timing:** After basal leaves form, before flower bud stage

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 4 to 7 fl oz/A Milestone

**Timing:** Rosette to bolting stages

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 2.5 to 3.3 oz/A Chaparral

**Timing:** Bolting stage

## Yellow hawkweed (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosette to bolting stages

**Herbicide:** 2,4-D

**Description:** Apply 1.43 to 1.90 lb ae/A 2,4-D

**Timing:** After basal leaves form, before flower bud stage

## Yellow starthistle

*Centaurea solstitialis*

### Chemical control

---

**Herbicide:** Transline or Stinger (clopyralid)

**Description:** 0.5 to 1 pt/A Transline or Stinger

**Timing:** Rosette to early bolting stages

**Herbicide:** Milestone (aminopyralid)

**Description:** Apply 3 to 5 fl oz/A Milestone

**Timing:** Rosette to bolting stages

**Herbicide:** Chaparral (aminopyralid + metsulfuron)

**Description:** Apply 1.5 to 2 oz/A Chaparral

**Timing:** Rosette to bolting stages

**Herbicide:** Forefront R&P (aminopyralid + 2,4-D)

**Description:** Apply 2 to 2.6 pt/A Forefront R&P

**Timing:** Rosette to bolting stages

**Herbicide:** Redeem R&P (triclopyr + clopyralid)

**Description:** Apply 1.5 to 2 pt/A Redeem R&P

**Timing:** Rosette to bolting stages

(*cont. on page 68*)

## Yellow starthistle (*cont.*)

### Chemical control (*cont.*)

---

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 1 to 2 pt/A Tordon 22K

**Timing:** Rosette to bolting stages

**Herbicide:** Curtail (clopyralid + 2,4-D)

**Description:** Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season

**Timing:** Rosette to bolting stages

**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 0.5 to 2.6 oz/A Telar XP; use a surfactant

**Timing:** Rosette stage

**Herbicide:** Overdrive (dicamba + diflufenzopyr)

**Description:** Apply 4 to 8 fl oz/A Overdrive

**Timing:** Actively growing plants

**Herbicide:** 2,4-D LV ester

**Description:** Apply 1 lb ae/A 2,4-D LV ester

**Timing:** Before flowering

### Biological control

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**Insect:** Starthistle bud weevil (*Bangasternus orientalis*)

**Description:** Larvae tunnel through the flowering stalk and into the flower head where they feed on receptacle tissue and developing seeds. Larval feeding reduces seed production. Documented light attack rates (>10%) provide little control. Collect weevils as adults.

**Redistribution:** May 1 to July 1. Widespread collection sites.

## Yellow starthistle (*cont.*)

### Biological control (*cont.*)

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**Insect:** Starthistle hairy weevil (*Eustenopus villosus*)

**Description:** Adult weevils feed externally on flower buds. Larvae feed within buds and destroy developing seeds and receptacle tissues and have a significant impact on seed production.

Documented heavy attack rates (>70%) provide good control.

Collect weevils as adults.

**Redistribution:** June 1 to July 15. Widespread collection sites.

**Insect:** Starthistle flower weevil (*Larinus curtus*)

**Description:** Larvae feed on developing seeds; a single larva can destroy more than 90% of the seeds in infested seed heads.

Documented medium attack rates (>30%) provide fair control.

Collect weevils as adults.

**Redistribution:** *Larinus curtus* may be infected with a disease that can reduce insect populations. It should not be redistributed to avoid spreading the disease to healthy *L. curtus* populations. July 15 to August 15. Widespread collection sites.

# Yellow toadflax

*Linaria vulgaris*

## Chemical control

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**Herbicide:** Telar XP (chlorsulfuron)

**Description:** Apply 2 to 3 oz/A Telar XP; use a surfactant

**Timing:** Bud to bloom

**Herbicide:** Tordon 22K (picloram) + Telar XP (chlorsulfuron)

**Description:** Apply 2 pt/A Tordon 22K + 1 oz/A Telar XP; use a surfactant

**Timing:** Bud to bloom

**Herbicide:** Tordon (picloram) + Escort XP (metsulfuron)

**Description:** Apply 2 pt/A Tordon 22K + 1 oz/A Escort XP; use a surfactant

**Timing:** Bud to bloom

**Herbicide:** Tordon 22K (picloram)

**Description:** Apply 4 pt/A Tordon 22K

**Timing:** Late summer to fall or late winter

**Herbicide:** Banvel, Clarity, Vanquish, etc. (dicamba)

**Description:** Apply 2 lb ae/A dicamba

**Timing:** Early spring

## Biological control

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**Insect:** Flower beetle (*Brachyterolus pulicarius*)

**Description:** Adults and larvae feed on flowers and developing fruits and reduce seed production. Documented high attack rates (>70%) yield fair control. Collect beetles in spring when the plant begins flowering. Beetles can be collected easily in larger numbers using sweep nets.

**Redistribution:** May and June. Limited collection sites.

## Yellow toadflax (*cont.*)

### Biological control (*cont.*)

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**Insect:** Defoliating moth (*Calophasia lunula*)

**Description:** Defoliation from larval feeding reduces plant vigor and seed production; total defoliation occurs infrequently. Attack rate overall is low (>10%), with infrequent mass outbreaks. Overall impact is undetermined. Collect moths as larvae.

**Redistribution:** May and June. Widespread collection sites.

**Insect:** Stem boring weevil (*Mecinus janthinus*)

**Description:** Adults feed on foliage whereas larvae mine within stems. Both can suppress flowering, reduce seed production, or kill stems. Genotypes attacking yellow toadflax are sparsely distributed and only recently introduced to Idaho. The level of control is not yet known. Collect weevils as adults.

**Redistribution:** May to late June. Limited collection sites.

**Insect:** Toadflax seed weevil (*Rhinusa antirrhini*)

**Description:** Adults feed on buds and flowers, and larvae feed on developing seed capsules. Both adult and larval feeding can reduce seed production by 80% to 90%. Documented medium attack rates (>30%) produce an unknown level of control. Collect weevils as adults.

**Redistribution:** June. Limited collection sites.

**Always read and follow the label to ensure  
any application made is safe and legal.**

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ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI publication do not substitute for instructions on the label. Due to constantly changing pesticide laws and labels, some pesticides may have been cancelled or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless both the pest and the plant, animal, or other application site are specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock. Trade names are used to simplify the information; no endorsement or discrimination is intended.

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